

# Environmental Education

Third Grade  
Science Unit



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Curriculum & Design

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Assignment One

## **Identify an Instructional Goal**

### **Goal**

Students will describe the physical and organic components in their surrounding environment including the land, air and water as well as the events, conditions and processes of their interactions. Students will discuss how people affect their local and global environment and give examples how they can improve it.

### **Setting**

According to its website, <http://www.wi.k12.ny.us/>, approximately 2,500 students attend kindergarten through fifth grade in six elementary schools in West Islip. West Islip's Board of Education and administration recognize the individuality of each child and believe that all children can learn in an educationally sound and supportive environment.

The West Brook Elementary School, located in West Islip, NY, shares its district's Education Goals, which are achieved through child-centered learning activities with hands-on experiences. Wide-ranging, high-quality programs are offered to students of every level, helping them realize academic and personal potentials.

The teacher-student ratio is 18 and the district spends \$10,768 per student. Attendance is over 97% and more than 95% of our graduates go on to higher education every year. Ms. Lisa Brush's third grade class consists of 22 students, twelve boys and ten girls.

### **Rationale**

The New York State third grade Science Learning Standard states that students will understand and apply scientific concepts, principles, and theories pertaining to the physical setting and living environment and recognize the historical development of ideas in science. This unit on Environmental Education is essential for students to not only learn about the different elements of their environment, but to also understand how their actions affect their community and how they can

help to conserve these natural resources. Students will benefit from the different lessons and activities because they will grow an awareness of their environment and they will achieve a better sense of community.

### **Present Program/ Curriculum**

The West Islip Third Grade Curriculum presently consists of 6 units. Ms. Brush's class follows this curriculum which covers the following topics: The Roles of Living Things, Nutrition, The Solar System, Life Cycles, the Earth's Water and Simple Machines.

### **Resources**

The following administrative and departmental support is needed in order to make this unit a success: Computers with Internet Access (in the classroom and also use of the computer lab) and access to the library for research materials.

### **Target Population**

This Science Unit on Environmental Education is designed for a third grade general education class located at West Brook Elementary School In West Islip, New York. West Islip is located on the south shore of Long Island about 45 miles east of New York City. Approximately 35,000 residents make West Islip their home. According to the 2000 census, of these 35,000 resident 96.89% are of the Caucasian race. The remaining three percent of the population consists of various races including Asian, African American, Hispanic and Native American. Ms. Brush's class of 22 consists of only 1 student that is of a minority race. There are twelve boys and ten girls in the class. One student receives additional educational services and 3 students leave the class for additional counseling.

## Curriculum Policy and Guides

### State Curriculum Publications:

New York State Learning Standards for Math Science and Technology  
<http://www.emsc.nysed.gov/ciai/mst/sciencestand/scistand.html>

Elementary Science Core Curriculum K-4  
<http://www.emsc.nysed.gov/ciai/mst/pub/elecoresci.pdf>

Math, Science & Technology Scope & Sequence  
<http://www.emsc.nysed.gov/guides/mst/part12.pdf>

Math, Science & Technology Performance Indicators  
<http://www.emsc.nysed.gov/guides/mst/perf.pdf>

### Related New York State Education Department Learning Standards:

#### **Science Standard 4:**

Students will: understand and apply scientific concepts, principles, and theories pertaining to the physical setting and living environment and recognize the historical development of ideas in science.

#### **Performance Indicators:**

##### ***The Physical Setting***

2. Many of the phenomena that we observe on Earth involve interactions among components of air, water, and land.
  - Describe the relationships among air, water, and land on Earth

##### ***The Living Environment***

6. Plants and animals depend on each other and their physical environment.
  - Describe how plants and animals, including humans, depend upon each other and the nonliving environment

- Describe the relationship of the sun as an energy source for living and nonliving cycles
7. Human decisions and activities have had a profound impact on the physical and living environment.
    - Identify ways in which humans have changed their environment and the effects of those changes

**MST Standard 1:** Students will use mathematical analysis, scientific inquiry, and engineering design, as appropriate, to pose questions, seek answers, and develop solutions.

**Performance Indicators:**

1. The central purpose of scientific inquiry is to develop explanations of natural phenomena in a continuing, creative process.
  - Ask “why” questions in attempts to seek greater understanding concerning objects and events they have observed and heard about
  - Question the explanations they hear from others and read about, seeking clarification and comparing them with their own observations and understandings
  - Develop relationships among observations to construct descriptions of objects and events to form their own tentative explanations of what they have observed use of what they have observed

**MST Standard 2:** Students will access, generate, process, and transfer information using appropriate technologies.

**Performance Indictors:**

1. Information technology is used to retrieve, process, and communicate information and as a tool to enhance learning.
  - Use a variety of equipment and software packages to enter, process, display, and communicate information in different forms using text, tables, pictures, and sound
  - Telecommunicate a message to a distant location with teacher help
  - Access needed information from printed media, electronic databases, and community resources

3. Information technology can have positive and negative impacts on society depending upon how it is used.
  - Describe the uses of information systems in homes and schools
  - Demonstrate ability to evaluate information critically

**MST Standard 5:** Students will apply technological knowledge and skills to design construct, use and evaluate products and systems to satisfy human and environmental needs.

**Performance Indicators:**

**Computer Technology** – Computers, as tools for design, modeling, information processing, communication, and system control, have greatly increased human productivity and knowledge.

- Use the computer as a tool for generating and drawing ideas

**Impacts of Technology** – Technology can have positive and negative impacts on individuals, society, and the environment and humans have the capability and responsibility to constrain or promote technological development

- Describe how technology can have positive and negative effects on the environment and on the way people live and work

**MST Standard 7:** Students will apply the knowledge and thinking skills of mathematics, science, and technology to address real-life problems and make informed decisions.

**Performance Indicators:**

**Connections**– The knowledge and skills of mathematics, science, and technology are used together to make informed decisions and solve problems, especially those relating to issues of science/technology/society, consumer decision-making, design, and inquiry into phenomena.

- Analyze science/technology/society problems and issues that affect their home, school, or community, and carry out a remedial course of action
- Make informed consumer decisions by applying knowledge about the attributes of particular

products and make cost/benefit tradeoffs to arrive at an optimal choice

**Strategies** – and technology are used together to make informed decisions and solve problems, especially those relating to issue of science/technology/society, consumer decision-making, design, and inquiry into phenomena.

- Students participate in an extended, culminating technology project. The project would require students to: work effectively, gather and process information, generate and analyze ideas, observe common themes, realize ideas and present results

**Skills & Strategies for Interdisciplinary Problem Solving –**

- *Working Effectively* – Contributing to the work of a brainstorming group, laboratory partnership, cooperative learning group, or project team; planning procedures; identifying and managing responsibilities of team members; and staying on task, whether working alone or as part of a group
- *Gathering and Processing Information* – Accessing information from printed media, electronic databases, and community resources and using the information to develop a definition of the problem and to research possible solutions
- *Gathering and analyzing ideas* – Developing ideas for proposed solutions, investigating ideas, collecting data, and showing relations and patterns in the data
- *Presenting Results* – Using a variety of media to present the solution and to communicate the results

#### **Local School District Policies and Guides:**

Elementary Science education in the West Islip Schools District allows students the opportunity to explore the physical and living world through activities which are as much fun as they are educational. Students spend time in their new science labs. All of the elementary teachers and the support staff provide stimulating and innovative laboratory activities, which teach students to observe, to inquire and to think critically.

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Worksheet B

## **Course Description**

### **Course of Study related to Unit on Environment Education**

**Third Grade Science** – The New York State third grade Science Core Curriculum Guide states that elementary science programs should emphasize a hands-on and mind-on approach to learning. Students learn effectively when they are actively engaged in the discovery process, often working in small groups. Experiences should provide students with opportunities to interact as directly as possible with the natural world in order to construct explanations about their world.

#### **Course Description:**

This course is intended for students in the third grade. The course will run the duration of one calendar school year. Students should have previous knowledge of the second grade science curriculum.

In the third grade, science covers three general topics: Life Science, Physical Science and Earth Science.

The **Life Science** area includes topics such as identifying the function of roots, stems, and leaves, observing the life cycle of plants and their growth and development, grasping the concept of the life cycle of insects, mammals, amphibians, and fish. This area also includes student awareness that environments are changing and knowing how organisms need to adapt to changing environments, how people affect plants and animals, and learning to identify what the environment provides for people such as food, energy etc.

The **Physical Science** section consists of students being able to describe matter and its properties, physical and chemical changes, demonstrate what makes things move, for example force and friction, understand gravity and magnetism, energy and storage, heat and temperature, sound, and electricity.

When studying **Earth Science**, students learn about volcanoes and earthquakes, the dynamics of erosion, what materials or natural resources come from the Earth, the water cycle. Another aspect of Earth Science in the third grade is studying the solar system, how the Sun affects Earth causing day, night, heat, and the seasons, and how scientists learn about the sun, moon, and planets.

### Identify Unit (s) of Study

A unit of instruction is a block of instruction centered around a single important topic or theme. A task or instructional analysis determines the sub-skills and knowledge students must learn in order to reach the unit objective(s) or instructional goal. A number of lessons are needed to help students complete the unit of instruction.

The following is a list of the major topics or units of instruction for this course. Each unit may vary in length of *time* required and *degree of complexity* for students.

01 Life Science – The Role of Living Things

02 Life Science- The Life Cycle

03 Life Science - Proper Health

04 Earth Science – Solar System

05 Earth Science – The Environment

06 Physical Science – Simple Machines

## **Beginning a Course Outline**

The following is a list of skills and knowledge for each unit in the Third Grade Curriculum in Westbrook Elementary School in the West Islip School District.

### **Unit: 01 Life Science – The Role of Living Things**

Lesson 01 What do living things need to live?

Lesson 02 How do living things get food?

Lesson 03 Habitats

Lesson 04 Food Chains

Lesson 05 How do living things adapt for protection?

### **Unit 02: Life Science – The Life Cycle**

Lesson 01 Animals – What is a life cycle?

Lesson 02 Animals – What are the stages of a life cycle?

Lesson 03 Plants – How do they grow?

Lesson 04 Plants – How do they change?

Lesson 05 Plants – What are the stages of growth?

Lesson 06 – Plants – Seeds

### **Unit 03: Life Science – Proper Health**

Lesson 01 Why does the body need food?

Lesson 02 How does your diet stack up?

Lesson 03 Keep your body & teeth clean

Lesson 04 How does your body use food? – digestion

**Unit 04: Earth Science – The Solar System**

Lesson 01 Moon

Lesson 02 Sun

Lesson 03 Earth Motions – How does it move Daily

Lesson 04 Earth Motion – How does it move Yearly

Lesson 05 Seasons

**Unit: 05 Earth Science – The Environment**

Lesson 01 What is the Environment?

Lesson 02 Water - The Water Cycle

Lesson 03 Land – Waste & Pollution

Lesson 04 Air – Acid Rain

Lesson 05 Natural Resources

Lesson 06 Reduce, Reuse, & Recycle

Lesson 07 Earth Day

**Unit 06: Physical Science – Simple Machines**

Lesson 01 Force & Energy

Lesson 02 Lever

Lesson 03 Pulleys

Lesson 04 Wheels & Axels

Lesson 05 Inclined Planes

Lesson 06 Screw & Wedges

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Assignment Two

## **INSTRUCTIONAL CONTENT/TASK ANALYSIS**

### **Environmental Education**

#### **INSTRUCTIONAL GOAL:**

Students will describe the physical and organic components in their surrounding environment including the land, air and water as well as the events, conditions and processes of their interactions. Students will discuss how people affect their local and global environment and give examples how they can improve it.

#### **1) Environment Components**

- 1.1 State that an Environment is all of the organic and inorganic components surrounding us, as well as the events, conditions and processes of their interactions.
- 1.2 List the three main components of the environment as Water, Air and Land.

#### **2) Water**

- 2.1 Explain that water vapor moves between the earth's surface and its atmosphere in a continuous cycle.
- 2.2 Orally recite the four main areas of the water cycle including Evaporation, Condensation, Precipitation, and Collection.
- 2.3 Identify Ground Water beneath the earth's surface in porous rock and soils that supplies wells and springs.
- 2.4 List the possible sites where water is stored or collected after precipitation during the water cycle.
- 2.5 Sketch a diagram of the water cycle and the stages water takes through it, after researching the topic on the Internet.

### 3) Land

- 3.1 Categorize waste, which is anything that is unwanted and is discarded.
- 3.2 Compare Hazardous waste (discarded solid, liquid or gaseous material that can harm people or the environment, and requires special disposal) and Municipal Solid Waste (MSW – garbage, refuse and other discarded materials resulting from residential, commercial, industrial and community activities.)
- 3.3 State that a landfill is a place designed and engineered to dispose of waste on land, have an impermeable liner to block the movement of liquid into the ground water and how garbage is spread into layers, compacted and covered each day.
- 3.4 Define compost as material resulting from the natural breaking down of organic material by bacteria, fungi and other organisms, which is used to enrich soil.
- 3.5 Test how biodegradable materials can be broken down by microorganisms, such as bacteria and fungi.

### 4) Air

- 4.1 Illustrate how acid rain is caused by emissions from the burning of fossil fuels.
- 4.2 Locate and describe the Ozone Layer as the layer in the upper atmosphere in which a concentration of ozone (a variation of the oxygen molecule and major component of air pollution) absorbs a significant amount of potentially hazardous ultraviolet radiation.
- 4.3 Show how emissions (odors or substances) which are generated by combustion and discharge affect the air quality.

## 5) Natural Resources

- 5.1 Define Natural Resources as materials such as minerals, trees or water that are supplied by nature.
- 5.2 Compare Renewable Resources such as trees, grasses, wild animals, surface water, ground water, air and soil, which are normally replenished through natural processes and Nonrenewable resources such as oil, coal and copper, which are available in fixed amounts in the earth's crust and can be exhausted because they are not replaced by natural processes or because they are used up faster than nature replaces them.
- 5.3 Illustrate how conserving natural resources, which is the practice of using resources, both natural and manufactured, without wasting them, including using them over and over to minimize their loss, help the environment
- 5.4 List the Three R's – Reduce (to decrease the amount of water generated), Reuse (to use a product more than once) and Recycle (collecting, preparing and remanufacturing of recyclable materials into new products that are purchased and used.)
- 5.5 Practice proper recycling procedures at school and at home using Curbside recycling programs and drop-off centers.
- 5.6 Explain how pollution, the contamination of soil, water or air by the discharge of water or other harmful materials, affects the environment.
- 5.7 Tell how littering is carelessly or intentionally discarding waste materials in an inappropriate place.

**6) Earth Day**

- 6.1 State how Earth Day, which is held each year, promotes awareness of environmental issues.
- 6.2 Discuss the EPA – the US Environmental Protection Agency, created in 1970, how it sets environmental protection and enforcement standards and how it serves the entire country through its 10 regional offices.
- 6.3 Explain how the Bottle Bill law requires deposits on beverage containers.
- 6.4 Express how the Clean Air Act gave the Environmental Protection Agency the responsibility of setting air quality standards for each pollutant.

## **Major Generalizations for your Unit of Study**

### **Instructional Goal**

Students describe the all of the physical and organic components in their surrounding environment including the land, air and water as well as the events, conditions and processes of their interactions. Students will discuss how people affect their local and global environment and examine how they can improve it.

### **Major Generalizations**

This elementary science unit on Environmental Education is designed for students in the third grade. This 6-week unit will encompass learning various aspects of the students' environment. Students will learn about the natural resources that surround them and how they can help to conserve these resources. They will also learn topics such as the water cycle, acid rain, recycling, and Earth Day. Students will need to have prior knowledge of living things and general knowledge of the earth and its physical settings. Throughout this unit, the students will learn new terminology, use technology, pose questions, and seek answers.

Upon completion of this unit, students will create a culminating project using the new information that they have learned and present the project to their classmates. This project-based unit is an excellent opportunity for students to learn higher-level thinking skills through problem solving and discovery learning. Students can also relate to this topic and develop a greater understanding of their environment.

## **Identify Interdisciplinary Objectives for your Unit of Study**

**Environmental Education** relates to various subject areas, as well as its core science curriculum.

**Government** - When discussing the EPA, students will learn about a government agency and how it serves the entire country, and how it sets and enforces environmental protection. Students will also learn about 2 laws that help to conserve our natural resources.

**Research** – Students will practice various research techniques while learning topics such as the water cycle, ozone layer, and others.

**Technology** – Students will be exposed to technology throughout the unit for researching purposes and well as to participate in a Webquest on the Three R's – reduce, reuse, and recycle.

**English Language Arts** – Throughout the unit, students will be exercising proper written and verbal language skills, while defining new terminology and answering various posed questions.

**Reading** – Students will be practicing reading, while being exposed to new topics and researching new material.

### **Interdisciplinary Objectives:**

After learning & researching about pollution, the student will be able to write an essay on how pollution and litter affects the environment. The student must use writing process (prewriting, drafting, revising, proofreading) and use proper revision strategies when revising their essay including conferring with teachers and peers.

After reading an article on the Environmental Laws, the student will discover how people make and change rules and laws such as the Bottle Bill Law and the Clean Air Act.

**Integration Strategies:**

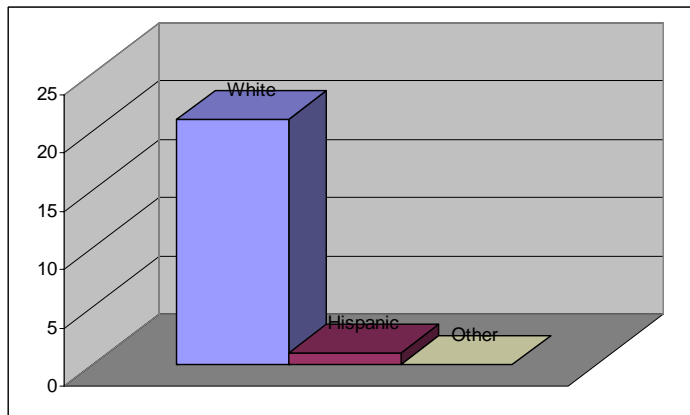
Several content areas will be included in this unit. Since this is a self-contained classroom, the theme of Environmental Education will be dispersed into all of the other subject areas including, reading, writing, spelling, mathematics, and social studies. Outside teachers will also be asked to participate in this theme for example the science and technology lab and art classroom. Much research can be done in the computer lab as well as creating any materials needed for their project. In an art class, students will be asked to create pictures illustrating an aspect of their environment that appeals to them. Students will use the science lab to test how biodegradable materials can be broken down by microorganisms.

## LEARNER ANALYSIS

### Needs, Interests, Abilities and Diversities of Learners

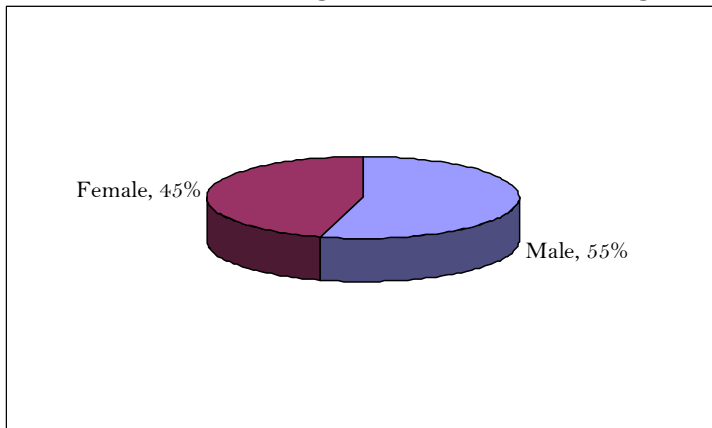
In order to create a productive and efficient learning environment for student to learn, a teacher must choose appropriate Instructional Methods. When developing these appropriate teaching and learning strategies for the unit, it is important to analyze the various characteristics and capabilities of the learners. Traits such as gender, ethnicity, reading and math levels, student interests and skills affect the way that students learn. In order to differentiate instruction to accommodate the range of learning needs, styles, and abilities teachers must learn about the students that are involved. Once the analysis is complete, teachers can use this information to influence instructional content, methods and the individual needs, interests and abilities of learners.

Racial Diversity, or lack of it, affects a classroom. Ms. Brush's third grade class consists almost entirely of Caucasian students. According to the 2000 census, of the 35,000 West Islip residents, 96.89% are of the Caucasian race. Only one student in this class is of a different race, which is Hispanic. It is important to take racial diversity into consideration when developing instructional methods because people from specific racial groups have distinct experiences and culture. In this classroom situation, it is important to expose the students to people of different ethnicities, racial groups and economic backgrounds throughout the course of the unit.

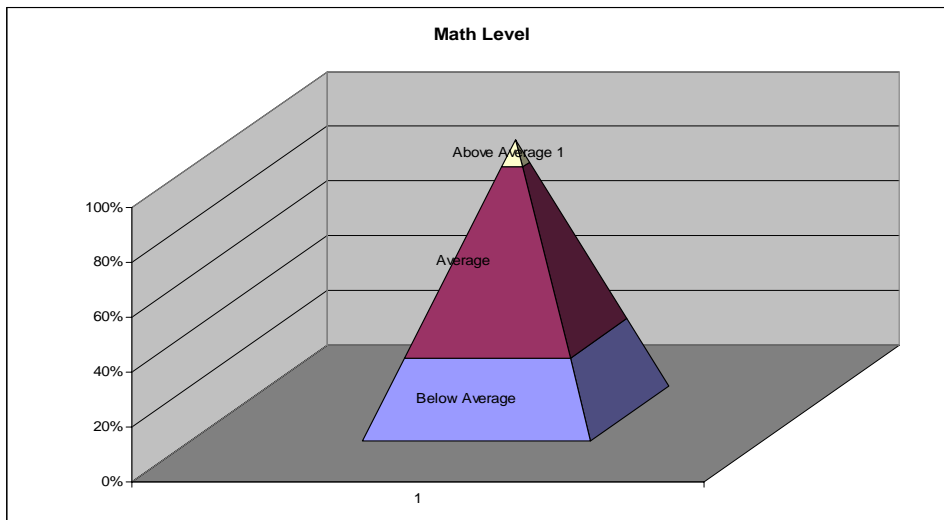
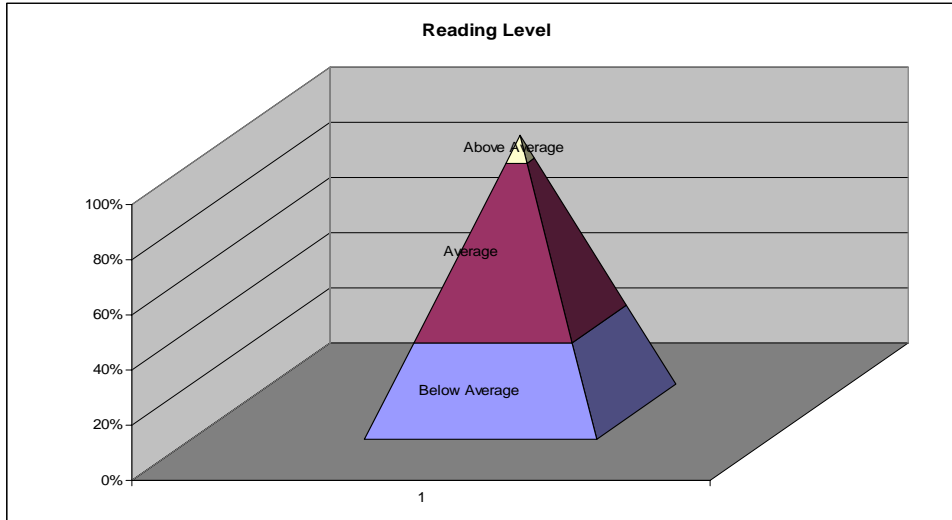


In this class of 22, one student has a physical disability. In today's society, people are extremely aware of physical differences. Schools are no different. It is important to bring awareness of the fact that people are different in many different ways. When teaching this unit, special consideration should be given to choose the appropriate methods for each activity to ensure success of the lesson for *all* students.

This third grade class consists of 22 students, 12 boys and 10 girls. In order to promote gender equity during this unit, it is important to make sure that the responsibility of group leaders are given to both boys and girls. When small work groups are created, ensure that there are equal numbers of boys and girls in each group. And, when students respond to questions, make sure that girls are called on as often as boys. In today's society, girls have been stereo-typed to achieve at a lower level in science education than boys. During the course of this unit, girls will be encouraged to participate fully.



Mrs. Brush's classroom consists of a wide variety of learners. When choosing appropriate research material, it is important to keep in mind that out of 22 students, 7 have below average reading levels. Six of the students receive additional reading services and one student leaves the class to attend the Resource Room one time per week. Mrs. Brush's class also has 6 students that are below average in math skills. Two students have above average reading and math levels. When choosing grouping for science experience, the cooperative groups will be based on heterogeneous grouping.



Student interests and skills are important when it comes to motivating students. Every student in Mrs. Brush's third grade class has a computer with Internet access at home. This information is useful when creating homework assignments that involve an Internet site or doing research on a topic. Many of the students career goals consist of become a professional athlete (ranging from Football Player to swimmer to Horseback Rider.) However, some students chose traditional professions such as policemen, doctors and veterinarians. The boys in the class prefer to play baseball or football, the girls like horseback riding or swimming, and both agreed on soccer as their sport of choice. And, an over-whelming majority (17 out of 22 students) prefer math as their favorite subject.

In this unit on environmental Education, all students will be given an equal opportunity to achieve!

### **Basic and Higher Order Thinking Skills and Technology in Unit of Study**

#### **Basic and higher order thinking skills infused into unit of study:**

- Observing
- Identifying Issues
- Identifying relationships and cause-an-effect relationships
- Deducing Implications
- Comparing and Contrasting
- Summarizing

#### **Strategies used to incorporate use of technology and technology based resources in unit of study:**

Technology will serve as an external motivator in this unit. All Technology will be used as an instructional tool for the purpose of helping students reach their learning objectives. Each piece of technology will be analyzed to make sure it is used to its greatest potential. Using the Internet will give students access to observe components of the environment that they would not be able to see in the classroom.

#### **Higher Order Thinking Skill Objectives incorporated in Instructional Goal:**

The student will:

- Observe their environment including all of its organic and inorganic components.
- Identify key issues in the environment.
- Identify the relationship between the 4 main areas in the water cycle and the forms that water vapor takes throughout the duration of the cycle.
- Deduce the implication of pollution and litter and its affects on the environment
- Compare and Contrast various aspects of the environment such as Hazardous Waste vs. Municipal Solid Waste and Renewable Resources vs. Non-Renewable Resources.
- After researching and reading materials on Earth Day, summarize how Earth Day helps the Environment.

**Implementation Strategies for Basic and higher order thinking skills & technology and technology based resources:**

In order to encourage the learning of these higher-order thinking skills, this unit will promote the use of critical thinking through problem-solving and discovery learning. Since Environmental Education is a topic that is important and relevant to students, problem solving will be used for the duration of the unit. Students will be encouraged to discover new information and seek answers to questions that are relevant in their own environment while experiencing and participating in activities that will generate behaviors that allow students to function as improved well-educated citizens.

The Internet will be used as a valuable resource for student research of various topics in this unit. Students will use this instructional tool throughout the course of this unit. A variety of websites, instructional software and videos will be used to help students observe the environment and discover how people affect their local and global environment and examine how they can improve it.

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Assignment Four

## **DEVELOP PERFORMANCE OBJECTIVES**

### **Develop Testing/Assessment Strategies**

#### **Performance Objective for Unit Instructional Goal:**

Given access to student's science textbook, computer lab and the Internet, the student will be able to describe the physical and organic components in their surrounding environment including the land, air and water as well as the events, conditions and processes of their interactions and discuss how people affect their local and global environment and examine how they can improve it. The description must include the following aspects of the environment: natural resources, the water cycle, the ozone layer, acid rain, water, pollution, recycling, Earth Day and conservation.

#### **Essential Questions / Motivational Questions**

What can you do to help the environment?  
How does pollution affect you?

#### **Learner Domain**

##### ***Cognitive***

Students will describe the physical and organic components in their surrounding environment as well as the events, conditions and processes of their interactions and discuss how people affect their local and global environment and examine how they can improve it.

##### ***Affective***

Students will achieve a sense of community by learning to reduce, reuse and recycle.

#### **Learner Pre-requisites**

The learner must have at least a second grade, basic computer skills and a general knowledge of the earth and its components.

## Cognitive Test Items

Sub-skill		Performance Criteria	Test Item
1.1	State that an environment is all of the organic and inorganic components surrounding us, as well as the events, conditions and processes of their interactions.	The statement must include a description of all of the organic and inorganic components surrounding us, as well as the events, conditions and processes of their interactions.	<b>Short Answer:</b> What is the definition of environment?
1.2	List the three main components of the environment as Water, Air and Land.	The list must include the following components: Water, Air and Land	<b>Short Answer:</b> What are the three main components of the environment?
2.1	Explain that water vapor moves between the earth's surface and its atmosphere in a continuous cycle.	The explanation must include how water vapor moves between the earth's surface and its atmosphere in a continuous cycle.	<b>Short Answer:</b> Explain how water vapor moves between the earth's surface and the earth's atmosphere.
2.2	Orally recite the four main areas of the water cycle including Evaporation, Condensation, Precipitation and Collection.	The oral statement must include the following four main areas of the water cycle: Evaporation, Condensation, Precipitation and Collection.	<b>Multiple Choice:</b> Which of the following is not one of the four main areas of the water cycle?
2.3	Identify Ground Water beneath the earth's surface in porous rock and soils that supplies wells and springs.	Student must locate ground water beneath the earth's surface that supplies wells and springs.	<b>Matching:</b> On a diagram, locate the ground water.
2.4	List the possible sites where water is stored or collected after precipitation during the water cycle.	The list must include the at least 2 of the following possible sites: lakes, rivers, oceans, and/or streams.	<b>Short Answer:</b> List at least 2 possible sites where water is stored or collected.
2.5	Sketch a diagram of the water cycle and the stages water takes through it, after	The sketch must include the four main areas of the water cycle, a description of each area, and the form water	<b>Group Project:</b> Create a poster size diagram of the water cycle, name the four

	researching the topic on the Internet.	takes as it moves through the water cycle.	main areas, their functions and list the form water takes as it moves through the cycle.
3.1	Categorize waste, which is anything that is unwanted and is discarded.	Waste must be categorized as anything that is unwanted and is discarded with examples such as banana peels or junk mail.	<b>Multiple Choice:</b> Which of the following is a waste item?
3.2	Compare Hazardous Waste and Municipal Solid Waste (MSW)	The comparison must name Hazardous Waste as discarded solid, liquid or gaseous material that can harm people or the environment, and requires special disposal and Municipal Solid Waste as garbage, refuse and other discarded materials resulting from residential, commercial, industrial and community activities)	<b>Essay:</b> Explain how hazardous waste is different from Municipal Solid Waste.
3.3	State that a landfill is a place designed and engineered to dispose of water on land, have an impermeable liner to block the movement of liquid into the ground water and how garbage is spread into layers, compacted and covered each day.	The statement must refer to a landfill as a place designed and engineered to dispose of water on land, have an impermeable liner to block the movement of liquid into the ground water and that garbage is spread into layers, compacted and covered each day.	<b>Completion:</b> A landfill is a place designed and engineered to dispose of water on land, it has an impermeable line to block the movement of liquid into the ground water and _____ is spread into layers, compacted and covered each day.
3.4	Define compost as material resulting from the natural breaking down of organic materials by bacteria, fungi and other organisms, which is used to enrich soil.	The definition must include compost as material resulting from the natural breaking down of organic materials by bacteria, fungi and other organisms, which is used to enrich soil.	<b>Multiple Choice:</b> Compost is the natural breaking down of organic materials by which of the following organisms?
3.5	Test how biodegradable materials can be broken	The results must show how materials can be broken down	<b>Group Project:</b> Groups will create

	down by microorganisms, such as bacteria and fungi.	by microorganisms, such as bacteria and fungi.	their own mini-compost jar experiment.
4.1	Illustrate how acid rain is caused by emissions from the burning of fossil fuels.	The explanation must show how acid rain is caused by emissions from the burning of fossil fuels.	<b>Completion:</b> acid rain is caused by emissions from the burning of _____,
4.2	Locate and describe the Ozone Layer as the layer in the upper atmosphere in which a concentration of ozone. (a variation of the oxygen molecule and major component of air pollution) absorbs a significant amount of potentially hazardous ultraviolet radiation.	The description must describe the Ozone Layer as the layer in the upper atmosphere in which a concentration of ozone (a variation of the oxygen molecule and major component of air pollution) absorbs a significant amount of potentially hazardous ultraviolet radiation.	<b>Matching:</b> On a diagram, locate the ozone layer.  <b>Multiple Choice:</b> The Ozone Layer is in which layer of the atmosphere?  <b>Short Answer:</b> How does the ozone layer protect us?
4.3	Show how emissions (odors or substances) which are generated by combustion and discharge affect the air quality.	The explanation must include that emissions, which are odors or substances, are generated by combustion and discharge and that they pollute the air quality.	<b>Short Answer?</b> Give one example of an emission.  What do emissions do to the environment?
5.1	Define Natural Resources as materials such as minerals, trees or water that are supplied by nature.	The definition must state that Natural Resources are materials such as minerals, trees or water that are supplied by nature.	<b>Multiple Choice:</b> Natural Resources are materials are supplied by...
5.2	Compare Renewable Resources, which are normally replenished through natural processes and Nonrenewable resources, which are available in fixed amounts in the earth's crust and can be exhausted because they are not replaced by natural processes or because they are used up faster than nature	The comparison must give examples of Renewable Resources such as trees, grasses, wild animals, surface water, ground water, air and soil, which are normally replenished through natural processes and Nonrenewable resources such as oil, coal and copper, which are available in fixed amounts in the earth's crust and can be exhausted because they are not replaced by natural processes or	<b>Essay:</b> Explain how Renewable Resources differ from Non-renewable Resources and give examples of each.

	replaces them.	because they are used up faster than nature replaces them.	
5.3	Illustrate how conserving natural resources, which is the practice of using resources, both natural and manufactured, without wasting them, including using them over and over to minimize their loss, help the environment	The demonstration must show conserving natural resources, both natural and manufactured, without wasting them, including using them over and over to minimize their loss, helps the environment by reducing the amount of natural resources used each day.	<b>Group Project:</b> Using a sponge as an example, students will complete a water conservation experiment which demonstrates human resource consumption and how we can conserve water.
5.4	List and define the Three R's – Reduce, Reuse and Recycle	The list must include a description of the Three R's - Reduce (to decrease the amount of water generated), Reuse (to use a product more than once) and Recycle (collecting, preparing and remanufacturing of recyclable materials into new products that are purchased and use)	<b>Short Answer?</b> What are the three R's?  Give at least two examples of each.
5.5	Practice proper recycling procedures at school and at home using Curbside recycling programs and drop-off centers.	The practice must include following proper recycling procedures at school and at home using Curbside recycling programs and drop-off centers.	<b>Group Project:</b> All bottles, cans, paper and other recyclable materials will be placed in the proper classroom recycling bin.
5.6	Explain how pollution, the contamination of soil, water or air by the discharge of water or other harmful materials, affects the environment	The explanation must list pollution as the contamination of soil, water or air by the discharge of water or other harmful materials, and it affects the environment including acid rain and damage to plants and animals.	<b>Multiple Choice:</b> Pollution is the contamination of which of the following by the discharge of water or other harmful materials?
5.7	Tell how littering is carelessly or intentionally discarding waste materials in an	The description must include how littering is carelessly or intentionally discarding waste materials in an	<b>Short Answer?</b> Littering is carelessly or intentionally discarding what type

	inappropriate place.	inappropriate place.	of materials in an inappropriate place?
6.1	State how Earth Day, which is held each year, promotes awareness of environmental issue.	The statement must include that Earth Day is held each year and that it promotes awareness of environmental issues.	<b>Essay:</b> How does Earth Day help the environment?
6.2	Discuss the EPA – the US Environmental Protection Agency, created in 1970, how it sets environmental protection and enforcement standards and how it serves the entire country through its 10 regional offices.	The discussion must include how the EPA (the US Environmental Protection Agency) sets environmental protection and enforcement standards and how it serves the entire country through its 10 regional offices.	<b>Short Answer:</b> What does EPA stand for?  What does the EPA do for the country?
6.3	Explain how the Bottle Bill law requires deposits on beverage containers.	The explanation must include how the Bottle Bill law requires deposits on beverage containers.	<b>Completion:</b> The_____Bill law requires deposits on beverage containers.
6.4	Express how the Clean Air Act gave the Environmental Protection Agency the responsibility of setting air quality standards for each pollutant.	The explanation must include how the Clean Air Act gave the Environmental Protection Agency the responsibility of setting air quality standards for each pollutant.	<b>Completion:</b> The_____Act gave the EPA the responsibility of setting air quality standards for each pollutant.

## Performance Test

### Task:

Sketch a diagram of the water cycle and the stages water takes through it.

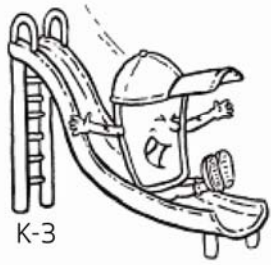
### Performance Objective:

Given access to student science textbook, computer lab and the Internet, the student will be able sketch a diagram of the water cycle and the stages water takes through it. The diagram must include and name the four main areas (Evaporation, Condensation, Precipitation and Collection) and their functions and list the form water takes as it moves through the cycle.

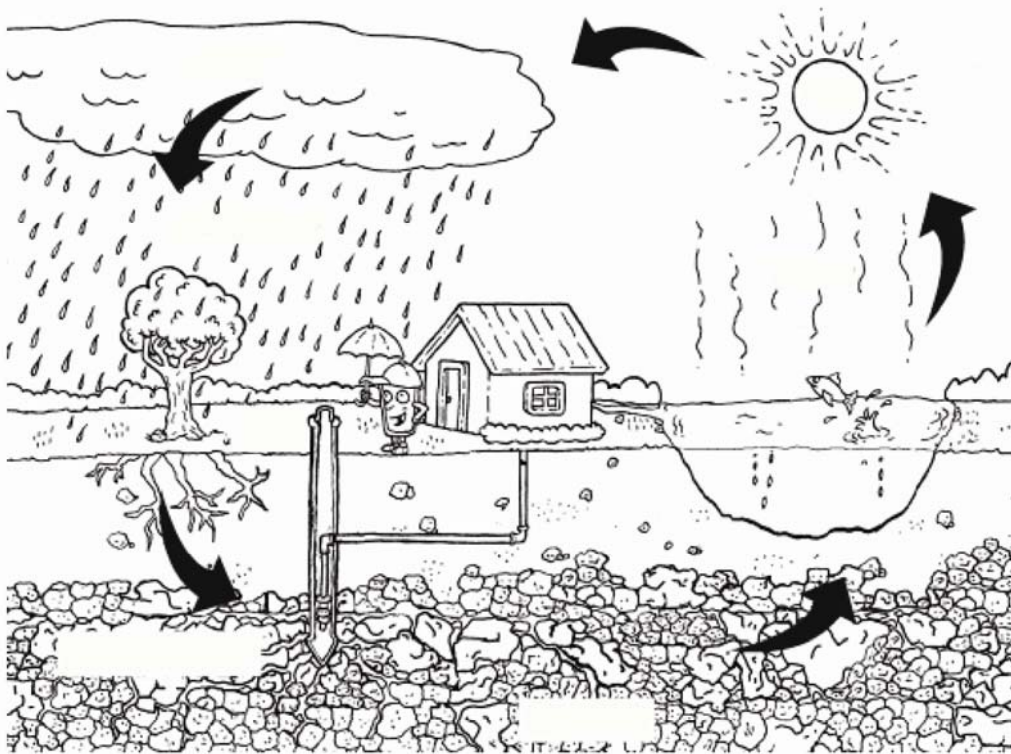
### The following items are rated on a scale of:

- 1 – Meets or exceeds expectations
- 2 – Does not meet all expectations
- 3 – Needs improvement in areas indicated

1	2	3	The student did:
			Log on to the Internet using an Internet Browser.
			Click on Bookmarks or Favorites.
			Click on <a href="#">Thirstin's Water Cycle Video</a> .
			Click on the word "Auto" to view the entire cycle in motion.
			Watch the video carefully.
			On the worksheet, label the four main areas of the water cycle which are written on the board.
			On the worksheet, label the different forms that water takes as it moves through the cycle. The words are written on the board.
			Once this is worksheet is completed, draw/color your own water cycle in your science notebook.
			Label the 4 main parts and the different forms of water.
			When finished, turn in your notebook, and work in your <a href="#">Thirstin's Wacky Water Adventure Activity Book</a>



# Thirstin's Water Cycle Adventure



## Instructions written on the Board:

**Label the 4 main areas:** Evaporation, Condensation, Precipitation and Collection.

**Label the forms of water:** water vapor, rain/snow, groundwater

## Develop Affective Goals for your Unit of Study

### Value objective:

- ❖ Students will achieve a sense of community by learning how to reuse, reduce and recycle.
- ❖ Students will make positive choices with regard to pollution and littering at school and at home in their daily lives.
- ❖ Students will exhibit behaviors that show a commitment to improving their local and global environment.

### Behaviors in which student demonstrate these values include:

- ❖ Encourages other students to reduce, reuse and recycle.
- ❖ Develops solutions to help reduce littering.
- ❖ Participates in identifying areas in their school and community which are filled with trash and works together to clean those areas.

### Teaching strategies used in which students might learn these attitudes & values:

- ❖ Classroom Webquest recycling activity:  
<http://iris.nyit.edu/~mdemarco/edit605/webquest/introduction.htm>
- ❖ Read a story about recycling that the students can relate to:  
*Sparrows Don't Drop Candy Wrappers*  
1971, Margaret Gabel, Dodd, Mead, New York.  
"Dos" and "Don'ts" of individual behavior regarding environmental pollution of all kinds.
- ❖ Inform students of various Environmental Community Service Projects by visiting the following website:  
[http://www.ecokids.ca/pub/eco\\_info/topics/environmental/earth\\_day\\_events.cfm](http://www.ecokids.ca/pub/eco_info/topics/environmental/earth_day_events.cfm)

Marianne DeMarco  
EDPC 605  
Assignment Five

## **Instructional Strategy Plan**

### **Pre-instructional Activities:**

#### **Motivation:**

At the beginning of the unit students will be read "The Lorax," by Dr. Seuss. After listening to the story, the students will be asked, "What can you do to help your environment?" The students will brainstorm and the ideas will be written on chart paper and displayed on the classroom bulletin board.

At the mid-point of the unit, students will be taken on a litter scavenger hunt through the school. They will then be asked, "How can the amount of litter be reduced?" "Does the school have rules against littering?" "Are the rules enforced?" "Does the school provide garbage containers near the litter locations?" The students will brainstorm and their ideas will be written on chart paper and displayed next to their answers from the beginning of the unit.

Throughout the unit, technology will be used as a resource to help stimulate the student's interest in Environmental Science. Students will participate in a Webquest and visit educational sites, such as the [EPA Kids Website](#).

#### **Objectives:**

During the first lesson of the unit, the students will be introduced to the various components of their Environment. At this point, students will be informed of the Instructional Goal for the unit. The objective will be recited orally to the students. The objective will be visually displayed on a classroom bulletin board. The bulletin board will depict the three main components of an environment – water, air and land. It will also host pictures of natural resources and recycling procedures.

#### **Testing Strategies:**

#### **Pre-requisite Skills:**

Prior to the start of the unit, various second grade science components will be reviewed. Students will have a general knowledge of the earth and its components.

**Quizzes and Practice Exercises:**

Students will be given a quiz after each component is completed. There will be a quiz on Water, Land, Air, Natural Resources, Recycling, and Earth Day. The quizzes will consist of various types of questions including short answer, multiple choice, completion, and matching. Students will be given essay questions as homework assignments, which will be graded. Students will also participate in group projects throughout the course of the unit. These projects will serve as practice exercises for various topics such as sketching the water cycle, natural resources and recycling.

**Pre/Post Tests:**

A pre-test will be given prior to the start of the unit in order to test to assess the student's entry level of knowledge prior to the start of the unit. A different version of this test will be given as the post test. The test will be a combination of similar questions which appear on the quizzes and the homework essay assignments.

**Differentiated Instruction:****Developmental:**

Peer-tutoring will be arranged for the students who do not master the instructional objectives at the same rate as the other students. Students will work together to do practice exercises until each student masters the objectives.

**Enrichment:**

Each student will be given an Environmental Activity Book. These books will consist of activities with a range of degree of difficulty. More capable learners will be given the opportunity to work on some these activities in class and at home. These activities will focus on making the world a better place. Students will also be given the opportunity to visit various environmental websites to learn more about how they can help their environment.

**Differentiated Learning:**

For several of the activities students will be divided into cooperative learning groups. Students with lower level skills will be grouped heterogeneously. A variety of teaching strategies, including inquiry-based learning as well as direct instruction, will be used in order to accommodate different students learning styles. Students will also participate in a variety of learning activities such as project-based learning.

**Objectives & Sub-Skills for Unit:**

**Lesson One – Environmental Components**

*Objectives: 1.1, 1.2*

*Learning Time: 30-minutes*

**Lesson Two – The Water Cycle**

*Objectives: 1.2, 2.1, 2.2,*

*Learning Time: 45-minutes*

*\* For a detailed lesson plan see below*

**Lesson Three – The Water Cycle**

*Objectives: 2.1, 2.3, 2.4*

*Learning Time: 30-minutes*

**Lesson Four – The Water Cycle**

*Objectives: 2.1, 2.5*

*Learning Time: 45-minutes*

*\* For a detailed lesson plan see below*

**Lesson Five - Waste**

*Objectives: 1.2, 3.1, 3.2*

*Learning Time: 30-minutes*

**Lesson Six - Landfills**

*Objectives: 3.1, 3.3*

*Learning Time: 30-minutes*

**Lesson Seven - Compost**

*Objectives: 3.1, 3.4*

*Learning Time: 45-minutes*

*\* For a detailed lesson plan see below*

**Lesson Eight – Biodegradable Materials**

*Objectives: 3.1, 3.5*

*Learning Time: 45-minutes*

**Lesson Nine – Ozone Layer**

*Objectives: 1.2, 4.2*

*Learning Time: 30-minutes*

**Lesson Ten – Acid Rain**

*Objectives: 4.1, 4.3*

*Learning Time: 30-minutes*

### **Lesson Eleven – Natural Resources**

Objectives: 1.1, 5.1

Learning Time: *30-minutes*

### **Lesson Twelve – Renewable vs. Non-renewable Resources**

Objectives: 5.2, 5.3

Learning Time: *45-minutes*

*\* For a detailed lesson plan see below*

### **Lesson Thirteen – Recycling**

Objectives: 5.4

Learning Time: *Two 45-minutes sessions*

*\* For a detailed lesson plan see below*

### **Lesson Fourteen – Recycling**

Objectives: 5.5

Learning Time: *30-minutes*

### **Lesson Fifteen – Pollution & Littering**

Objectives: 5.6, 5.7

Learning Time: *30-minutes*

### **Lesson Sixteen – Earth Day**

Objectives: 6.1

Learning Time: *30-minutes*

### **Lesson Seventeen – EPA & Environmental Laws**

Objectives: 6.2, 6.3, 6.4

Learning Time: *Two 30-minutes sessions*

*\* For a detailed lesson plan see below*

## **Lesson Two – The Water Cycle**

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*Objectives: 1.2, 2.1, 2.2,*

*Learning Time: 45-minutes*

### **Teacher Presentation of New Content**

The teacher will introduce the students to the Water Cycle.

Technology will be used to aid in the student's excitement and enthusiasm for the topic. They will visit a teacher-made website, view an educational video and participate in an online quiz.

### ***Methods/Material/Media:***

*The Teacher will:*

1. Introduce students to a diagram of the water cycle.
2. Describe how the cycle works.
3. Define the words evaporation, condensation, precipitation and collection.
4. Have the students log on to [The Water Cycle](#).
5. Read the first two pages with the students orally and discuss.
6. Discuss the different forms that water takes throughout the cycle.
7. Instruct students to review the previously defined parts of the water cycle.
8. Instruct the students to watch the video, "The Water Cycle" by [Unitedstreaming](#). (Previous to lesson, teacher will ensure that each computer has Windows Media Player.)
9. Instruct student to answer several quiz questions.
10. Encourage the students to visit some of the websites that are listed on the student activities page when they have completed the quiz.

### **Student Practice/Application**

Students will discuss the concept of a cycle. They will visit a website, view an online video tutorial and participate in an online quiz.

Students that complete this lesson early will have the opportunity to participate in some educational online activities.

### ***Methods/Material/Media:***

The students will:

1. Log on to the Internet.
2. Click on to [The Water Cycle](#).
3. Read and discuss the introduction pages that describe the water cycle using a large diagram which will be displayed in the room and each area will be discussed.

4. Watch a tutorial video, from [Unitedstreaming](#) called *The Water Cycle*.
5. Participate in small quiz and if time permits they will visit some of the websites on the student activities page.
6. Visit educational websites from the student's resources page, if time permits.

### Performance Feedback

Students will receive immediate feedback on the website quiz. Students will be given positive reinforcement during the discussion of the water cycle. If the student's answer is correct they will be informed to move on to the next question. If the answer is incorrect they will be asked to try again.

The Water Cycle

▶ Home  
Tutorial  
Parts  
Assessment  
Links  
Credits  
Contact

## The Water Cycle

The Water Cycle is the Earth's way of using and recycling water.

The Earth has a limited amount of water, which keeps going around and around in a continuous cycle.

The Water Cycle is important to humans, animals, and plants because we all need water to survive.

Enter your name

[Click Here to Begin](#)

## **Lesson Four – The Water Cycle**

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*Objectives: 2.1, 2.5*

*Learning Time: 45-minutes*

### **Teacher Presentation of New Content**

The teacher will demonstrate an experiment in order to reinforce evaporation as one of the main areas of the water cycle. This experiment will also grab the student's attention and motivate them throughout the lesson. The teacher will instruct the students as they watch a short video clip, complete a worksheet and create a diagram of the water cycle.

### **Methods/Material/Media:**

*The Teacher will:*

1. Put a bowl in a sunny place in the classroom near a windowsill.
2. Pour water into the bowl until it is about  $\frac{1}{4}$  full.
3. Place a mug in the center of the bowl.
4. Cover the top of the bowl tightly with the plastic wrap.
5. Put a rubber band around the bowl to hold the plastic wrap in place.
6. Tell the students to observe the bowl as it is now and ask for predictions.
7. Explain to the students that the bowl will be placed in the sun for a couple of hours and that we will then observe it again to see what occurred.
8. Instruct the students to log on to the Internet.
9. Direct the students to [Thiristin's Water Cycle Video](#).
10. Observe as the students watch the video.
11. Distribute a blank diagram of the water cycle.
12. Write the four main areas on the blackboard as you inform the students that they must label each of these areas.
13. Tell the students that they must also label the different forms that water takes as it moves through the cycle. Write these words on the board as well.
14. Instruct the students to draw and label their own diagram of the water cycle in their notebooks.
15. Later on that day, return to the experiment to display the results.

### **Student Practice/Application**

Students will observe a science experiment on evaporation. They will then log on to the Internet and watch a short video clip describing the

components of the water cycle. They will then complete a worksheet. Finally, students will draw a diagram of the water cycle in their science notebook.

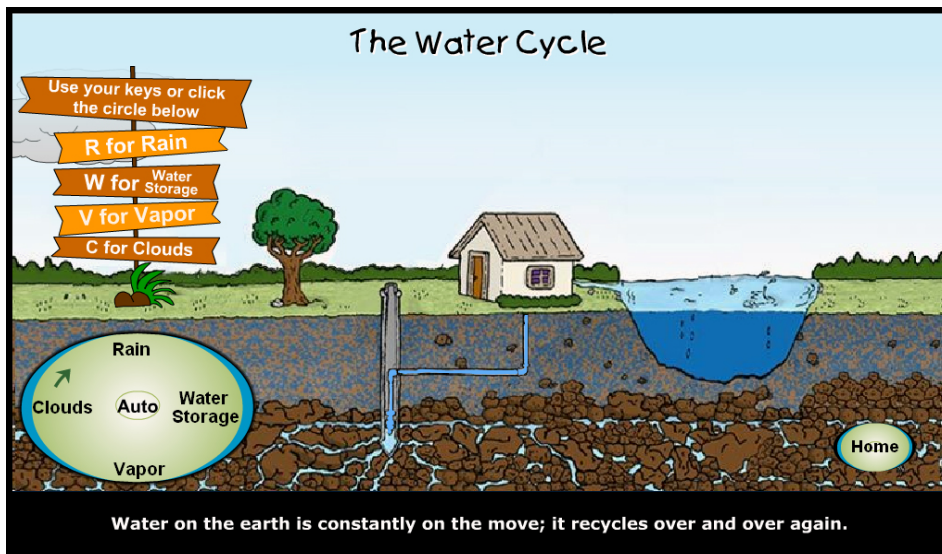
**Methods/Material/Media:**

The students will:

1. Observe carefully as the teacher performs an evaporation science experiment.
2. Predict the results of the experiment.
3. Log on to the Internet using an Internet Browser.
4. Click on Bookmarks or Favorites.
5. Click on [Thiristin's Water Cycle Video](#).
6. Click on the word "Auto" to view the entire cycle in motion.
7. Watch the video carefully.
8. On the worksheet, label the four main areas of the water cycle which are written on the board.
9. On the worksheet, label the different forms that water takes as it moves through the cycle. The words are written on the board.
10. Once this worksheet is completed, draw/color a diagram of the water cycle in their science notebook.
11. Label the 4 main parts and the different forms of water.

**Performance Feedback**

Students will turn in their worksheets and receive feedback the following day. Teacher will circulate the room as the students are drawing and they will be given positive reinforcement.



## **Lesson Seven - Compost**

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Objectives: 3.1, 3.4

*Learning Time: 45-minutes*

### **Teacher Presentation of New Content**

To motivate the students, the teacher will present the student with pictures of various materials and ask for their prediction on decomposition time. The teacher will ask the students to name other materials that can be recycled. More than likely they will mention glass bottles, paper bags etc. The teacher will explain to the students that almost another 30% of household waste can be recycled through composting. The teacher will then complete a composting activity with the class.

### **Methods/Material/Media:**

*The Teacher will:*

1. Have the students take out a piece of paper.
2. Hold up pictures of various pictures of materials such as tin cans (80-100 years), glass bottles (unknown, maybe forever), disposable diaper (500-600 years), leather shoe (40-50 years) and plastic bottle (1 million years).
3. Ask the students to write down how long they think it would take for each item to decompose.
4. Give the results and discuss the student's answers.
5. Ask the students to name other materials that can be recycled.
6. Explain that 30% additional household waste can be recycled through composting.
7. Display some organic waste for the students including: vegetable peels and seeds, fruit peels and seeds, coffee grounds, eggs shells, nut shells and any other vegetable or fruit scraps.
8. Explain to students that composting is nature's way of recycling. We can help by speeding up the process.
9. Prompt the students to think of what type of organisms could breakdown these materials to help enrich the soil.
10. As a class, create a small compost bin using a wooden box.
11. One at a time, call each student up to place an item in the bin which will already have soil spread in the bottom of it.
12. Explain to the student that the soil already has small microorganism in it such as bacteria or fungi to help decompose (worms may also be used.)

13. Add either water or sawdust in order to adjust the moisture of the compost. It should be damp to the touch.
14. Explain to the students that the pile needs to be heated up by the sun for four to five days. The pile should also be mixed occasionally.
15. Explain that as the compost it will settle down or shrink in size and be ready to use as soil for gardening in about two months.
16. Show the students a sample of what compost would look like in two months.

### **Student Practice/Application**

Students will make predictions on the times for decomposing various materials. They will discuss the recycling of household materials and how to speed up the process. The students will then participate in creating their own compost bin.

### ***Methods/Material/Media:***

The students will:

1. Take out a piece of paper.
2. View various pictures of materials.
3. Write down how long they think it would take for each item to decompose.
4. Discuss their answers.
5. Name other materials that can be recycled.
6. Look at organic waste for the students including: vegetable peels and seeds, fruit peels and seeds, coffee grounds, eggshells, nut shells and any other vegetable or fruit scraps.
7. Think of what type of organisms could breakdown these materials to help enrich the soil.
8. Create a small compost bin using a wooden box.
9. Place an item in the bin which will already have soil spread in the bottom of it.
10. View a sample of what compost would look like in two months.

### **Performance Feedback**

Students will be given positive reinforcement during the discussion of composting.

## **Lesson Twelve – Renewable vs. Non-renewable Resources**

Objectives: 5.2, 5.3

*Learning Time: 45-minutes*

### **Teacher Presentation of New Content**

The teacher will recall with the students the natural resources that were discussed in the previous lesson. Prior to the lesson the teacher will have the words printed out with a picture of it next to the word, laminated and placed on magnets. The teacher will ask students to name as many natural resources as possible. As the students name the natural resources, the teacher will place them on the board.

### ***Methods/Material/Media:***

*The Teacher will:*

1. Discuss natural resources with the students.
2. Prompt the students to list as many natural resources as possible.
3. Place the natural resources cards on the board in random order.
4. Show a 23-minute video on natural resources called, "All About Natural Resources."
5. Reinforce the video's statement that some natural resources are renewable and some are non-renewable.
6. Ask and discuss with the students what makes a resource renewable and non-renewable.
7. Distribute a blank worksheet chart with one column for renewable and one for non-renewable.
8. Tell the students to use the resources on the board and write them in either column.
9. Draw two columns on the blackboard.
10. Invite students to come up to the board one at a time to place the magnets in the proper column.
11. Comment on each resource and ask the student to give their reason for placing the resource in that particular column.

### **Student Practice/Application**

Students will discuss natural resources and name some of the resources that were discussed in a previous lesson. They will watch a video and complete a compare and contrast activity in class.

***Methods/Material/Media:***

The students will:

1. Discuss and name natural resources.
2. Carefully watch a 23-minute video called, "All About Natural Resources."
3. Discuss what makes a resource renewable and what makes a resource non-renewable.
4. Complete a blank worksheet chart and fill in the columns for renewable and non-renewable using the resources on the board.
5. One at a time, go up to the board and place the magnets in the proper column.
6. Give their reason for placing the resource in that particular column.

**Performance Feedback**

The teacher will ask questions during the video and give students feedback. Students will receive immediate feedback on their worksheet as they place their answers on the blackboard. Students will be given positive reinforcement during the discussion of natural resources and as they answer the questions to the worksheet.

## **Lesson Thirteen – Recycling**

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Objectives: 5.4

*Learning Time: Two 45-minute sessions*

### **Teacher Presentation of New Content**

The teacher will explain that natural resources are the things that we take from the Earth to make all of the things that we need. When those things get worn out we throw them out, and they become garbage. The teacher will have the students guess how much garbage is thrown out in one year. The teacher will assist the students while they participate in a Webquest, in which students learn how make a difference at school and in their environment.

### **Methods/Material/Media:**

*The Teacher will:*

1. Introduce the students to the Three R's – Reduce, Reuse, and Recycle.
2. Have the students log on to the Internet using an Internet Browser.
3. Have the students click on Bookmarks or Favorites.
4. Have the students click on [Celebrate Earth Day by Recycling](#) Webquest.
5. Read through the Introduction, Task, Process, Evaluation, and Conclusion with the students.
6. Explain that the student's task will be to become an environmental inspector and investigate the current disposal practices at your school.
7. Inform the students that they must carefully follow the steps in the process page which include: familiarize themselves with current recycling practices by visiting their [local community recycling web site](#), and with different ways to reduce, reuse and recycle items found in everyday life by reviewing the [Student Resource Page](#).
8. Place the students in one of 3 groups – Reduce, Reuse or Recycle.
9. Have the students brainstorm and list ways that their school can help the environment by practicing the 3 R's. Inform them that they may look back at the website for some examples.
10. Inform the students that they will be asked to present this list to your class, so be sure that it is complete and accurate.

11. Instruct the students to make at least 3 posters per group to encourage all students, teachers and parents in your school to use the 3 R's. These posters will be hung throughout the school.
12. Encourage the students to view the evaluation page to make sure that they have fully completed the assignment.

### **Student Practice/Application**

Students will complete a Webquest activity on the Three R's – reduce, reuse and recycle. The Webquest consists of researching proper recycling techniques, familiarizing themselves with local recycling policies and promoting awareness to their school.

### ***Methods/Material/Media:***

The students will:

1. Log on to the Internet using an Internet Browser.
2. Click on Bookmarks or Favorites.
3. Click on [Celebrate Earth Day by Recycling](#) Webquest.
4. Read through the Introduction, Task, Process, Evaluation, and Conclusion with the teacher.
5. Listen carefully and follow the steps in the process page which include: familiarize themselves with current recycling practices by visiting their [local community recycling web site](#), and with different ways to reduce, reuse and recycle items found in everyday life by reviewing the [Student Resource Page](#).
6. Brainstorm and list ways that their school can help the environment by practicing the 3 R's. Students may look back at the website for some examples.
7. Present the list to the class.
8. Create at least 3 posters per group to encourage all students, teachers and parents in your school to use the 3 R's. These posters will be hung throughout the school.
9. View the evaluation page to make sure that they have fully completed the assignment.

### **Performance Feedback**

Students will be graded on the posters that they create. Students will be given positive reinforcement while they create these posters.

### ***Methods/Material/Media:***

A [rubric](#) is provided on the evaluation page of the Webquest.



## Introduction

Natural resources are the things that we take from the Earth to make all of the things that we need. When those things get worn out we throw them out, and they become garbage.

Did you know that we make 250 million tons of garbage each year? That's a lot of garbage! People need to learn more ways on how to recycle products in their homes, schools and at work.

You can help to save our natural resources by practicing the 3 R's:

**Reduce. Reuse. Recycle.**

[<< Previous](#) • [Next >>](#)

### Making A Poster : The 3 R's - Reduce, Reuse & Recycle

CATEGORY	4	3	2	1
<b>Content - Accuracy</b>	At least 7 accurate facts are displayed on the poster.	5-6 accurate facts are displayed on the poster.	3-4 accurate facts are displayed on the poster.	Less than 3 accurate facts are displayed on the poster.
<b>Attractiveness</b>	The poster is exceptionally attractive in terms of design, layout, and neatness.	The poster is attractive in terms of design, layout and neatness.	The poster is acceptably attractive though it may be a bit messy.	The poster is distractingly messy or very poorly designed. It is not attractive.
<b>Graphics - Relevance</b>	All graphics are related to the topic and make it easier to understand. All borrowed graphics have a source citation.	All graphics are related to the topic and most make it easier to understand. All borrowed graphics have a source citation.	All graphics relate to the topic. Most borrowed graphics have a source citation.	Graphics do not relate to the topic OR several borrowed graphics do not have a source citation.
<b>Use of Class Time</b>	Used time well during each class period. Focused on getting the project done. Never distracted others.	Used time well during each class period. Usually focused on getting the project done and never distracted others.	Used some of the time well during each class period. There was some focus on getting the project done but occasionally distracted others.	Did not use class time to focus on the project OR often distracted others.
<b>Knowledge Gained</b>	Student can accurately answer all questions related to facts in the poster and processes used to create the poster.	Student can accurately answer most questions related to facts in the poster and processes used to create the poster.	Student can accurately answer about 75% of questions related to facts in the poster and processes used to create the poster.	Student appears to have insufficient knowledge about the facts or processes used in the poster.

## **Lesson Seventeen – EPA & Environmental Laws**

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Objectives: 6.2, 6.3, 6.4

*Learning Time: Two 30-minute sessions*

### **Teacher Presentation of New Content**

The teacher will discuss the US Environmental Protection Agency. Technology will be used to aid in the student's excitement and enthusiasm for the topic. The teacher will review the process of how a bill becomes a law. The teacher will have the students visit the EPA's website and discuss how the EPA sets and enforces standards while it serves the country. The teacher will also lead the class in a law making activity where the students write an Environmental bill and have it passed as a law.

### **Methods/Material/Media:**

*The Teacher will:*

1. Discuss the US Environmental Protection Agency with the class.
2. Explain how it was created in 1970 to help set environmental protection and enforcement standards for the entire country.
3. Review with the students the process of how a bill becomes a law.
4. Instruct the students to log on to the Internet.
5. Direct the students to [Ben's Guide to the US Government](#) website.
6. Give example of a law (Bottle Bill) and an Act (Clean Act.)
7. Direct the students to [EPA Kids website](#).
8. Brainstorm with the students a new Environmental Law that they would like to pass and write these ideas on the board.
9. Take a vote on which three they would like to write a bill for.
10. Separate the student's into three groups.
11. Have the students write a paragraph bill proposal.
12. Explain to the students that each group will present the bill to Congress (rest of the class) and that it will be approved or vetoed by the President (the teacher)
13. Select one group at a time to present their bill.
14. Distribute and collect ballot forms for each group that presents.
15. Approve or Veto bill and give reasons to the students
16. Discuss each bill with the class.

## Student Practice/Application

Students will learn about the US Environmental Protection Agency. They will visit websites to review how a bill becomes a law and to explore how the EPA helps sets and enforces standards while it serves the country.

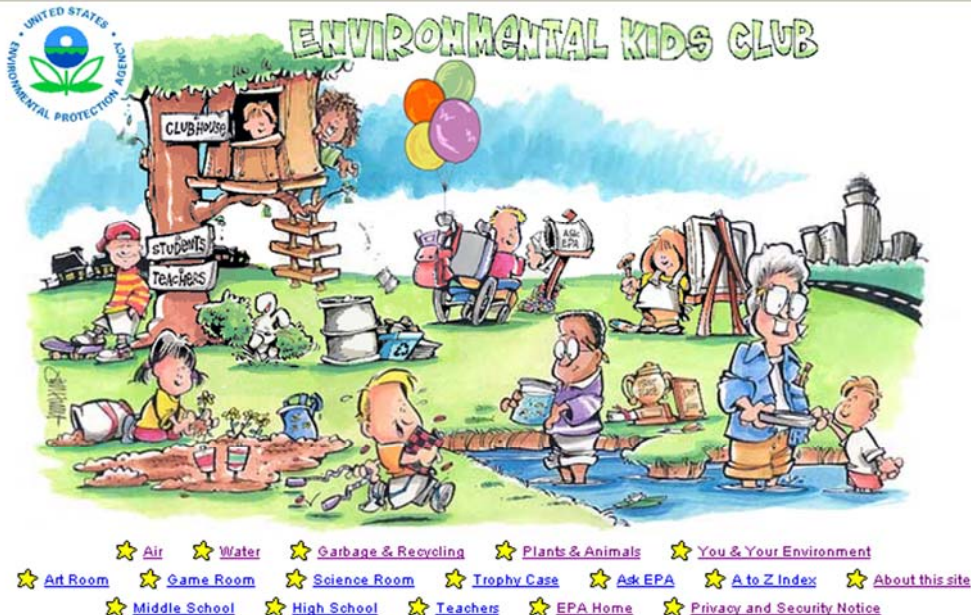
### **Methods/Material/Media:**

The students will:

1. Discuss the US Environmental Protection Agency.
2. Review the process of how a bill becomes a law.
3. Log on to the Internet.
4. Visit [Ben's Guide to the US Government](#) website.
5. Visit the [EPA Kids website](#).
6. Brainstorm new Environmental Laws that they would like to pass.
7. Vote on which three they would like to write a bill for.
8. Write a paragraph bill proposal.
9. Present the bill to Congress (rest of the class) and that it will be approved or vetoed by the President (the teacher)
10. Fill out a ballot form for each group that presents.
11. Discuss each bill.

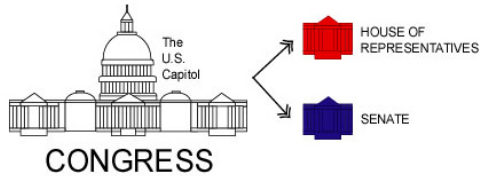
### **Performance Feedback**

Students will receive immediate feedback on their bill proposal. The students will hand in their proposal for a grade. Students will be given positive reinforcement during the discussion of the EPA.



## Who Makes Laws?

National laws are made in Congress, which is part of the legislative branch and is made up of the House of Representatives and the Senate. Congress can make laws on all kinds of matters, such as setting speed limits on highways or regulating how much radon may be found in drinking water. During each Congress, which lasts two years, senators and representatives introduce about 10,000 bills. During that time, about 650 bills are passed by Congress and then signed into law by the president.



To learn more, choose from the following:

- ◆ [What is a Law?](#)
- ◆ [Who Makes Laws?](#)
- ◆ [How Laws are Made](#)
- ◆ [The Legislative Branch](#)
- ◆ [The House of Representatives](#)
- ◆ [The Senate](#)



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Last updated: December 13, 1999  
Page Name: <http://bensguide.gpo.gov/3-5/lawmaking/laws.html>



Marianne DeMarco  
EDPC 605  
Technology Assignment

## Evaluation of Educational Websites

**Title of Website:**

EPA – Environmental Kids Club



**Curriculum Area:**

Science – The Living Environment, Unit on Environmental Education

**URL:**

<http://www.epa.gov/kids/>

**Learning Objectives that will be supported by this site:**

Students will:

1. Describe the physical and organic components in their surrounding environment
2. Describe the events, conditions and processes of the interaction of the physical and organic components
3. Discuss how people affect their local and global environment and examine how they can improve it.
4. Achieve a sense of community by learning to reduce, reuse and recycle.

**Web Evaluation Rubric:**

*Authority*.....*Score 4*

**An author is listed with appropriate credentials, and is the creator of the material.**

*Affiliation*.....*Score 4*

**The site is supported by a reputable institution without bias in the information.**

*Purpose*.....*Score 4*

**The purpose of the website is clear and meets my objectives.**

*Objectivity*.....*Score 4*

**The website contains little advertising and is free of bias.**

Content.....Score 4  
The information relates to my objectives, the links work, and the site is well-organized.

Learning Process.....Score 4  
The information will challenge learners to use high-order thinking skills, effectively engage the learner, and meet my learning objectives.

Audience.....Score 4  
The web pages are written at an appropriate level and the information is suitable for my classroom.

Currency.....Score 4  
Information has been updated in the last three months.

Design.....Score 4  
The web site loads well, is easy to navigate, visually pleasing, and easy to read.

Total Score--> 36



**Title of Website:**  
The Water Cycle

**Curriculum Area:**  
Science – The Living Environment, Unit on Environmental Education

**URL:**  
<http://iris.nyit.edu/~mdemarco/multimediaedit610/watercycle.htm>

**Learning Objectives that will be supported by this site:**

Students will:

1. Describe the physical and organic components in their surrounding environment
2. Describe the events, conditions and processes of the interaction of the physical and organic components
3. Discuss how people affect their local and global environment and examine how they can improve it.
4. Achieve a sense of community by learning to reduce, reuse and recycle.

**Web Evaluation Rubric:**

*Authority*.....*Score 4*  
**An author is listed with appropriate credentials, and is the creator of the material.**

*Affiliation*.....*Score 4*  
**The site is supported by a reputable institution without bias in the information.**

*Purpose*.....*Score 4*  
**The purpose of the website is clear and meets my objectives.**

*Objectivity*.....*Score 4*  
**The website contains little advertising and is free of bias.**

*Content*.....*Score 4*  
**The information relates to my objectives, the links work, and the site is well-organized.**

*Learning Process*.....*Score 4*  
**The information will challenge learners to use high-order thinking skills, effectively engage the learner, and meet my learning objectives.**

*Audience*.....*Score 4*  
**The web pages are written at an appropriate level and the information is suitable for my classroom.**

*Currency*.....*Score 4*  
**Information has been updated in the last three months.**

*Design*.....*Score 4*  
**The web site loads well, is easy to navigate, visually pleasing, and easy to read.**

**Total Score--> 36**

The screenshot shows a website interface with a dark background. On the left is a blue navigation menu with white text: 'The Water Cycle' (with a blue arrow icon), 'Home', 'Tutorial', 'Parts', 'Assessment', 'Links', 'Credits', and 'Contact'. The main content area is a white, irregularly shaped box with a blue border. At the top of this box is the title 'The Water Cycle' in blue. Below the title are three paragraphs of text: 'The Water Cycle is the Earth's way of using and recycling water.', 'The Earth has a limited amount of water, which keeps going around and around in a continuous cycle.', and 'The Water Cycle is important to humans, animals, and plants because we all need water to survive.' Below the text is a text input field with the placeholder 'Enter your name'. At the bottom of the white box is a blue button with white text that says 'Click Here to Begin'.

**Title of Website:**

Celebrate Earth Day by Recycling – a webquest

**Curriculum Area:**

Science – The Living Environment, Unit on Environmental Education

**URL:**

<http://iris.nyit.edu/~mdemarco/edit605/webquest/webquest.htm>

**Learning Objectives that will be supported by this site:**

Students will:

1. Discuss how people affect their local and global environment and examine how they can improve it.
2. Achieve a sense of community by learning to reduce, reuse and recycle.

**Web Evaluation Rubric:**

*Authority*.....Score 4  
**An author is listed with appropriate credentials, and is the creator of the material.**

*Affiliation*.....Score 4  
**The site is supported by a reputable institution without bias in the information.**

*Purpose*.....Score 4  
**The purpose of the website is clear and meets my objectives.**

*Objectivity*.....Score 4  
**The website contains little advertising and is free of bias.**

*Content*.....Score 4  
**The information relates to my objectives, the links work, and the site is well-organized.**

*Learning Process*.....Score 4  
**The information will challenge learners to use high-order thinking skills, effectively engage the learner, and meet my learning objectives.**

*Audience*.....Score 4  
**The web pages are written at an appropriate level and the information is suitable for my classroom.**


*Currency*.....Score 4  
**Information has been updated in the last three months.**

*Design*.....*Score 4*  
The web site loads well, is easy to navigate, visually pleasing, and easy to read.

**Total Score---> 36**

a webquest

<a href="#">Introduction</a>	<a href="#">Task</a>	<a href="#">Process</a>	<a href="#">Evaluation</a>	<a href="#">Conclusion</a>
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Earth Day  
Every Day

## Introduction

Natural resources are the things that we take from the Earth to make all of the things that we need. When those things get worn out we throw them out, and they become garbage.

Did you know that we make 250 million tons of garbage each year? That's a lot of garbage! People need to learn more ways on how to recycle products in their homes, schools and at work.

You can help to save our natural resources by practicing the 3 R's:

**Reduce. Reuse. Recycle.**

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[<< Previous](#) • [Next >>](#)

4/20/05 Last Updated [Home](#) • [Student Resources](#) • [Teacher Resources](#) • [References](#) • [About the Author](#)

**Title of Website:**

Ben's Guide to the US Government for Kids



**Curriculum Area:**

Social Studies – US Government, Laws & Law Making

**URL:**

<http://bensguide.gpo.gov/3-5/lawmaking/laws.html>

**Learning Objectives that will be supported by this site:**

Students will:

1. Describe how a bill becomes a law.
2. Write their own Environmental Bill.
3. Propose the Bill to Congress (their class.)
4. Achieve a sense of community by learning to help the environment.

**Web Evaluation Rubric:**

*Authority*.....Score 4

**An author is listed with appropriate credentials, and is the creator of the material.**

*Affiliation*.....Score 4

**The site is supported by a reputable institution without bias in the information.**

*Purpose*.....Score 3

**The purpose of the website is somewhat clear and meets most of my objectives.**

*Objectivity*.....Score 4

**The website contains little advertising and is free of bias.**

*Content*.....Score 4

**The information relates to my objectives, the links work, and the site is well-organized.**

*Learning Process*.....Score 4

**The information will challenge learners to use high-order thinking skills, effectively engage the learner, and meet my learning objectives.**

*Audience*.....Score 2

**The web pages are written at above the level of my audience, but some of the information is useful.**

Currency.....Score 4  
Information has been updated in the last three months.

Design.....Score 4  
The web site loads well, is easy to navigate, visually pleasing, and easy to read.

Total Score---> 33

Ben's Guide to  
U.S. Governmentfor Kids

K-23-56-89-12P&T

## Who Makes Laws?

National laws are made in Congress, which is part of the legislative branch and is made up of the House of Representatives and the Senate. Congress can make laws on all kinds of matters, such as setting speed limits on highways or regulating how much radon may be found in drinking water. During each Congress, which lasts two years, senators and representatives introduce about 10,000 bills. During that time, about 650 bills are passed by Congress and then signed into law by the president.



HOUSE OF REPRESENTATIVES  
SENATE

CONGRESS

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