

Conservation and Environmental Agencies

Strand	Earth Resources
Topic	Investigating conservation of natural resources
Primary SOL	6.9 The student will investigate and understand public policy decisions relating to the environment. Key concepts include a) management of renewable resources; b) management of nonrenewable resources; c) the mitigation of land-use and environmental hazards through preventive measures; and d) cost/benefit tradeoffs in conservation policies.
Related SOL	6.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations in which j) current applications are used to reinforce science concepts. 6.7 The student will investigate and understand the natural processes and human interactions that affect watershed systems. Key concepts include f) major conservation, health, and safety issues associated with watersheds.

Background Information

The following statements are found in the Constitution of Virginia, Article XI:

To the end that the people have clean air, pure water, and the use and enjoyment for recreation of adequate public lands, waters, and other natural resources, it shall be the policy of the Commonwealth to conserve, develop, and utilize its natural resources, its public lands, and its historical sites and buildings. Further, it shall be the Commonwealth's policy to protect its atmosphere, lands, and waters from pollution, impairment, or destruction, for the benefit, enjoyment, and general welfare of the people of the Commonwealth.

Conservation means using our resources wisely and protecting them for the future.

Materials

- Internet access
- Four large plastic trash cans or other containers
- Floor scale or balance
- Rubber gloves
- Copy or audio of Shel Silverstein poem "Sarah Cynthia Sylvia Stout Would Not Take the Garbage Out"

Vocabulary

compliance, enforcement, landfill, pesticides, pollutants, regulations, toxins, waste

Student/Teacher Actions (what students and teachers should be doing to facilitate learning)

Introduction

1. Read aloud Shel Silverstein’s poem “Sarah Cynthia Sylvia Stout Would Not Take the Garbage Out.” (This is also available as an audio download from the album *Where the Sidewalk Ends*.)
2. Ask and discuss the following questions to generate awareness of environmental concerns involving resource use and waste management:
 - What do you do with things you no longer need or want?
 - Where does your trash go when it leaves your trashcan? Trace as far as possible.
 - Does your family recycle? Why, or why not?
 - Have you ever visited a landfill or garbage dump? What do you know about one?
 - How does waste disposal increase our use of energy? How does this impact our natural resources?

Activity 1: How Much Waste Do We Create?

Procedure

1. With permission of the school administration, have students collect one classroom’s solid waste trash for five days.
2. Each morning, have students record the weight of the collected trash from the previous day and record the data on a spreadsheet and graph.
3. Instruct students to use rubber gloves to sort the trash into boxes in the following four categories: (a) paper (e.g., copy paper, notebook paper, newsprint, construction paper, catalogs); (b) plastic; (c) glass; (d) other.
4. At the end of the week, have students calculate the weight of the trash in each category and the total weight of all trash collected. Have them record these data on the spreadsheet and graph, and lead a class discussion to reflect on the results.

Observations and Conclusions

1. Have students examine the results to draw conclusions. Ask the following questions:
 - Were the findings surprising?
 - What materials collected are recyclable?
 - What materials collected could have been reused?
 - Looking at the data for each category, what materials were thrown away most frequently?
 - Where will this trash go after it is no longer needed for this activity?
 - What impact does throwing away these things have on our natural resources? On our environment?
 - What agencies regulate our disposing of trash?

Activity 2: Perspectives on Real-Life Situations

Procedure

1. Have students access the *Virginia Naturally* Web site and click on the current month's news to read current environmental news stories from Virginia media sources.
2. Direct students to locate and read reports concerning the following:
 - Success and/or failure stories about waste collection or management
 - Examples of resource management success and/or failure
 - Current noteworthy news reports concerning resource and waste management
3. Have students identify the location of the news event, the natural resource(s) affected, and the cost/benefit of the situation.

Observations and Conclusions

1. Have students, individually or in groups, provide responses to the readings.
2. Discuss success stories, asking, "Who was responsible for the success? What was the motivation for improvement? What will be the present and future results? Could this success happen elsewhere?"
3. Discuss stories with negative environmental consequences, asking, "How can this problem be overcome? What predictions can be made for the future? How can we make a difference in this problem?"

Activity 3: Resource Management

Procedure

1. Discuss with students the fact that an important aspect of conservation is people's ability to find and tap into community and municipal resources that are designed to assist people manage resources.
2. Divide students into six teams, and give each team one of the following resource categories: Water, Air, Land, Soil, Forest, or Wildlife.
3. Have teams search the *Virginia Naturally*, EPA, or other Web site to
 - identify agencies that assist in the conservation and management of their assigned resource
 - identify a law or regulation imposed by an agency that oversees their assigned resource.

Observations and Conclusions

1. Have each group prepare and present a three-minute infomercial about the management of their resource.
2. Facilitate another class discussion based on the following questions: "We've discussed ways that individuals can conserve resources and reduce the pollutants that enter our watershed, but what should be the role of government? What local, state, and federal governmental conservation efforts are now in place? What conservation efforts should government put in place?"

Assessment

- **Questions**
 - What regulations, incentives, and voluntary efforts help conserve resources and protect environmental quality?
 - What agencies regulate water, air, land, soil, forest, and wildlife conservation?
- **Journal/Writing Prompts**
 - Complete a 4-square graphic organizer, including examples, nonexamples, characteristics, noncharacteristics for the topic *conservation*.
 - Write a short story about resource management from the perspective of an “endangered” resource.
- **Other**
 - Have students create a public service announcement or poster that might be used by one of the local, state or federal resource management agencies.
 - Make a summary cube to address these six prompts:
 - Recall: Identify the six natural resources managed by local and state agencies.
 - Comprehension: Explain the difference between the EPA and the Virginia Department of Environmental Quality.
 - Application: List some of your recommended solutions for conservationists.
 - Analysis: Identify some of the cost/benefit tradeoffs of conservation.
 - Synthesis: Create a slogan that encourages conservation.
 - Evaluation: Identify the natural resource that is most affected by a lack of conservation, and explain why.

Extensions and Connections (for all students)

- Have students create a Readers’ Theater script (Fisher & Frey, 2007, pp. 80-82) to highlight current environmental issues in the news with the purpose of raising public awareness.
- Have students select one or more waste-reduction projects for schoolwide implementation.

Strategies for Differentiation

- Have students create a concept map to organize and show the relationships among the vocabulary terms.
- Have students create a multimedia slide show presentation to highlight current environmental issues in the news with the purpose of raising public awareness.
- Have students bring in a sample of items they use daily that could be reused but instead are routinely thrown away. Display the items in the class, and ask students to explain why these items are not reused but how they could be.
- Allow students to listen to a short audio clip from the *Curious George* soundtrack “Reduce, Reuse and Recycle.”
- Invite a member of the community waste management agency to discuss how trash is dispersed, what trash is recyclable, and how other localities manage waste.
- Research the Department of Environmental Quality (DEQ), or write to one of its representatives, for information on the ways the agency helps to protect the environment.
- Put students into several groups, and have each group devise a waste management plan to reduce the amount of waste the class creates in a week. Give each group a week to try out

their plan. Direct them to record detailed data about their plan and its success or failure. At the end of the trial weeks, have students discuss the successes and failures of the plans and elaborate on the reasons their the plans worked or did not work.