Scientific Inquiry, Episode 1
Teacher's Guide

Grade Level: K–2	**Curriculum Focus:** Science	**Lesson Duration:** 1–2 class periods

Program Description

Protecting Our Earth (6:30)—See how to protect our planet from pollution.
Matter (7:00)—Discover everyday examples of matter and explore how matter changes from one form to another.
Sound (7:24)—Examine how sounds are created and learn how we measure noise.

Onscreen Questions

- What is one way you can reduce waste?
- What is matter?
- How does sound travel?

Lesson Plan

Student Objectives

- Describe ways in which people affect the environment.
- Discover how pollution harms plants and animals.
- Demonstrate ways to reduce, reuse, and recycle waste at school.

Materials

- *Scientific Inquiry, Episode 1* video
- Latex or plastic gloves, 1 pair per student
- Garbage bags
- Poster board, 1 sheet per student group
- Pencils, erasers, and rulers
- Crayons or markers
- Computer with Internet access (optional)

Procedures

1. Discuss pollution and the ways in which humans negatively affect the environment. Ask the students: What is pollution? What kinds of human activities create pollution? A good way to introduce this topic is to watch "Protecting the Earth," a segment in *Scientific Inquiry, Episode 1*.
2. After watching the segment, ask students to describe examples of litter or pollution they have experienced. How does litter and pollution affect plants and animals? Talk about problems that may occur when trash is not properly disposed of.
3. Take the class to the playground, lunch area, or another enclosed school area where trash is often found. Divide students into groups of three or four. Give each group a garbage bag and each student a pair of protective gloves, have the students spend about 20 minutes collecting trash.
4. Then bring the class to a contained area outside the classroom and hold up samples of what they collected. ***NOTE: Be sure you and the students do not remove protective gloves yet.*** Discuss the types of things that were found. Which could have been recycled or reused? Discuss ways some trash items could have been avoided in the first place. (Example: Instead of buying small bags of chips, a family could purchase a large bag and pack chips in a reusable container everyday.)
5. Return to the classroom to discuss what students have learned about the trash they found at school. Reiterate easy ways to help reduce the amount of waste people create. Have students remain in their groups and ask them to discuss pollution and ideas for reducing, reusing, and recycling waste.
6. Then have each group create a poster presentation that shows ways in which students, teachers, and others at school can reduce, reuse, and recycle waste. Each poster should include at least two facts about pollution and two ways to reduce, recycle, or reuse waste at school. Encourage students to be creative and make colorful posters. Students may find the following Web sites helpful:

http://www.epa.gov/recyclecity/

http://www.epa.gov/kids/index.htm

7. Have students present their posters to the class. Arrange for volunteers to present their posters to other classrooms and talk about ways to reduce, reuse, and recycle waste at school. Hang the finished posters in visible areas around the school to show others how your students suggest preserving our natural resources and protecting our environment.

Assessment

Use the following three-point rubric to evaluate students' work during this lesson.

- **3 points:** Students were highly engaged in class and group discussions; fully participated in the collecting-trash activity; and designed a creative and informative poster presentation with their group that met all of the criteria (at least two facts about pollution and two ways to reduce, recycle, or reuse waste).

- **2 points:** Students participated in class and group discussions; somewhat participated in the collecting-trash activity; and designed an adequate and somewhat informative poster presentation with their group that met most of the criteria (one fact about pollution and one way to reduce, recycle, or reuse waste).
- **1 point:** Students participated minimally in class and group discussions; did not participate in the collecting-trash activity; and did not help their group design a poster or as a group designed an incomplete and somewhat informative poster presentation that met only one aspect of the criteria (one fact or no facts about pollution and one or no way to reduce, recycle, or reuse waste).

Vocabulary

exhaust

Definition: Waste gasses that are sent out from an engine

Context: Cars, trucks, and buses create exhaust, a common type of pollution.

pollution

Definition: Harmful or poisonous substances that dirty the air, water, or land

Context: Pollution can be dangerous to plants and animals, including people.

recycle

Definition: To convert waste into a form in which it can be reused

Context: One way of making less trash is to recycle papers and plastics.

waste

Definition: An unusable or unwanted substance or material

Context: We can take simple steps to help reduce waste and reuse goods.

Academic Standards

National Academy of Sciences

The National Science Education Standards provide guidelines for teaching science as well as a coherent vision of what it means to be scientifically literate for students in grades K-12. To view the standards, visit http://books.nap.edu.

This lesson plan addresses the following science standards:

- Science as Inquiry: Understanding about scientific inquiry
- Life Science: Organisms and environments; Populations and ecosystems; Interdependence of organisms

- Science in Personal and Social Perspectives: Populations, resources, and environments; Personal and community health; Environmental quality; Natural resources

Mid-continent Research for Education and Learning (McREL)

McREL's Content Knowledge: A Compendium of Standards and Benchmarks for K-12 Education addresses 14 content areas. To view the standards and benchmarks, visit http://www.mcrel.org/compendium/browse.asp

This lesson plan addresses the following national standards:

- Life Skills—Working With Others: Displays effective interpersonal communication skills; Contributes to the overall effort of a group
- Health—Knows environmental and external factors that affect individual and community health
- Technology: Understands the nature of technological design
- Science—Life Science: Understands relationships among organisms and their physical environment

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Support Materials

Develop custom worksheets, educational puzzles, online quizzes, and more with the free teaching tools offered on the Discoveryschool.com Web site. Create and print support materials, or save them to a Custom Classroom account for future use. To learn more, visit

- http://school.discovery.com/teachingtools/teachingtools.html

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DVD Content

This program is available in an interactive DVD format. The following information and activities are specific to the DVD version.

How To Use the DVD

The DVD starting screen has the following options:

Play Video—This plays the video from start to finish. There are no programmed stops, except by using a remote control. With a computer, depending on the particular software player, a pause button is included with the other video controls.

Video Index—Here the video is divided into sections indicated by video thumbnail icons; brief descriptions are noted for each one. Watching all parts in sequence is similar to watching the video

from start to finish. Brief descriptions and total running times are noted for each part. To play a particular segment, press Enter on the remote for TV playback; on a computer, click once to highlight a thumbnail and read the accompanying text description and click again to start the video.

***Curriculum Units*—**These are specially edited video segments pulled from different sections of the video (see below). These nonlinear segments align with key ideas in the unit of instruction. They include onscreen pre- and post-viewing questions, reproduced below in this Teacher's Guide. Total running times for these segments are noted. To play a particular segment, press Enter on the TV remote or click once on the Curriculum Unit title on a computer.

***Standards Link*—**Selecting this option displays a single screen that lists the national academic standards the video addresses.

***Teacher Resources*—**This screen gives the technical support number and Web site address.

Video Index

Curriculum Units