What Can We Do?

Strand	Living Systems	
Topic	Investigating ecosystems	
Primary SOL	4.5	The student will investigate and understand how plants and animals, including humans, in an ecosystem interact with one another and with the nonliving components in the ecosystem. Key concepts include f) influences of human activity on ecosystems.
Related SOL	4.1	The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations in which m) current applications are used to reinforce science concepts.

Background Information

Throughout the years, positive and negative influences or impacts have been made to the environment. Contaminants have been added to the Chesapeake Bay and its tributaries, have been buried in the ground, and have added to the air. Some people continue to act in ways that damage the environment. However, others are active in cleaning up the planet. Many students are planting sea grasses, raising trout, growing oysters, planting trees, and recycling.

Materials

- Blank transparency or interactive white board
- Attached What Can We Do? data sheet

Vocabulary

environment, water pollution, air pollution, conservation, recycling, reducing, fossil fuels, preserve

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

Introduction

1. Ask students what they know about conservation by asking the following questions:
   - Who recycles at home?
   - Why are people encouraged to recycle?
   - What are some other ways we can conserve resources?
2. Tell students that they will try to find ways that humans have impacted their school ground environment.

Procedure

1. Divide the class into pairs of students. Give each pair a copy of the attached What Can We Do? data sheet, and explain that they will be taking a survey of the negative and positive impact humans have had on the environment of their school.

2. Monitor the students as they walk the school grounds and the school interior looking for signs of negative and positive impacts on the environment by man. Instruct students to record their findings on the data sheet.
3. After returning to the classroom, discuss the results of the students' surveys. Compile all the data into one set of classroom data on a transparency copy of the data sheet.
4. Have the students brainstorm ways they can be instrumental in changing some of the problems. Even though some problems may seem out of their control, inform students that they can write letters to the people who do have control to convey ideas for correcting the problems.

Conclusion

1. Have students share their results with other classes as a culminating activity.

Assessment

- **Questions**
  - How does pollution affect other living organisms in the environment?
  - Can you have any effect on the improvement of your environment?
- **Journal/writing prompts**
  - Imagine that you are the principal and have received the list of all the human influences on the school grounds. What would you do to solve the problems?
- **Other**
  - Review the data sheets for accuracy.

Extensions and Connections (for all students)

- Provide pictures of ecological problems (e.g., air pollution, erosion, litter) and have students offer solutions. If possible, carry out a plan to solve those problems for which students can have a positive effect.
- Have the students write a story about a 200-year-old tree on the school property and the changes it would have seen over the last 100 years.
- Have students take digital photographs of an ecological problem before and again after they have solved the problem.
- Have students make a presentation to the parents' group which supports your school (e.g., PTA, PTO, etc.) and ask for their backing for projects to improve the environment.
- Have students make posters highlighting environmental problems and possible solutions to display in the hallways of the school.
- Have the class speculate as to what the schoolyard looked like 200 years ago. What kind of organisms would they have found there? Have any of these disappeared due to the negative impact of man on the environment?
- Have students do a similar survey of the environment in their neighborhood or at their house.
- Have students read a book about pollution and share their thoughts about the story.

Strategies for Differentiation

- Have students create a litter collage to display in the classroom or hallway.

- Create a sort including things that can be recycled and things that cannot be recycled. This can be done with technology.
- Have students create books about what they found outside on the playground and report on its impact on our environment.
- Have students draw pictures and label the pictures in their science notebooks.
- Visit a local recycling center.
- Have students create a recycling center for parents. Items that cannot be recycled as part of the community recycling service can be accepted at the school (e.g., batteries, dry cell batteries, plastic grocery or zip top bags, juice boxes, etc.).

What Can We Do?

Name: _____ Date: _____

Look for signs of human impact on the environment in your school, schoolyard, or neighborhood. Place a check in the column if evidence is observed. If it is, write a brief comment on what the damage is and how it might have been created and what might be possible ways to address the problem. Use rows at the bottom or the back of your sheet for other discoveries.

Sign of Damage	Check if Present	Comments
Weathering and erosion of soil		
Litter		
Soil compaction		
Lack of trees and shrubs to hold soil		
Gas or oil on parking lot		
Soil, sand, litter, leaves present in street gutters and storm drains		
Paper and other recyclables thrown away in dumpster		
Lights left on in rooms		
Leaking water faucets		
Air conditioning below 78°F or heating above 68°F		
Recyclable items thrown away in cafeteria		
Window shades blocking sunlight on cold day/ left open on hot days		
Gardens or trees that have been planted		