

Keeping Our Neighborhood Healthy- Reduce, Reuse, Recycle
3rd grade
Environmental Science

Standard 6: Science in Personal and Environmental Perspectives- The student will demonstrate personal health and environmental practices.

Benchmark 2: The student will demonstrate an awareness of changes in the environment.

Indicator 2: The student develops personal actions to solve pollution problems in and around the neighborhood.

Standard 1: Science as Inquiry- The student will experience science as full inquiry.

Benchmark 1: The student will develop the skills necessary to do full inquiry.

Indicator 4: The student begins developing the abilities to communicate, critique, analyze his/her own investigations, and interprets the work of other students.

Process Skills:

Observing

Classifying

Inferring

Communicating

Science Concept addressed:

This activity attempts to address the science concept of pollution and its effect on the environment. It attempts to teach students how trash can be reduced, reused, and recycled. It will also teach students how to determine what objects may be recycled in their own community. The students are expected to learn ways they can help reduce pollution by reducing, reusing, and recycling the material they use in every- day life. They are also expected to learn that they have responsibility for the “health” of their environment.

Guiding Question:

How can you reduce, reuse and recycle material to help reduce pollution in our neighborhood?

Informal Assessment:

To determine effectiveness of the activity, I will informally assess my students by their strategies of how to reduce, reuse, and recycle the trash objects given to them. I will informally assess their understanding through the chart they make categorizing the material they have as recyclable, reusable, or reducible. The strategies they devise must be accurate (the correct materials must be promoted as recyclable, reducible, or reusable) and realistic for my students and our neighborhood to accomplish. I will also conduct a pre- and post- assessment asking the students to write on a sticky note what objects they think can be recycled. I will judge understanding based off the responses given after the students conduct the investigation.

Materials:

A **worksheet** dividing the categories of reduce, reuse, and recycle and with space to write their strategies.

An assortment of every-day objects that are recyclable, some that are not, and some that are biodegradable. Divide the materials between the number of groups you have and place them in a plastic shopping bag. Make sure each bag contains a couple items from each category. Following are possible objects for six groups of four.

Green= recyclable Red= nonrecyclable Blue= biodegradable

-A list of items your community accepts at the recycling center

- Plastic shopping bag
- Aluminum foil
- Empty aluminum cans
- Sheets of crumpled paper
- Newspapers
- Plastic bottles

- Glass jars
- Styrofoam cups
- Plastic sandwich bags
- Candy wrappers
- Plastic wrap
- Tree leaves
- Orange peels

Bag 1:

- Plastic shopping bag
- aluminum foil
- 1 empty aluminum can (2 HDPE)
- 1 sheet of crumpled paper
- 1 styrofoam cup
- 1 plastic sandwich bag
- 1 tree leaf

Bag 4:

- Plastic shopping bag
- 1 newspaper
- 1 plastic bottle (1 PETE)
- Glass jar (baby food jar)
- 1 candy wrapper
- Plastic wrap
- Orange peels

Bag 2:

- Plastic shopping bag
- 1 newspaper
- 1 plastic bottle (1 PETE)
- Glass jar (baby food jar)
- 1 plastic sandwich bag
- 1 candy wrapper
- 1 tree leaf

Bag 5:

- Plastic shopping bag
- aluminum foil
- 1 empty aluminum can (2 HDPE)
- 1 sheet of crumpled paper
- Plastic wrap
- 1 styrofoam cup
- 1 tree leaf

Bag 3:

- Plastic shopping bag
- aluminum foil
- 1 empty aluminum can (2 HDPE)
- 1 sheet of crumpled paper
- Plastic wrap
- 1 candy wrapper
- Orange peels

Bag 6:

- Plastic shopping bag
- 1 newspaper
- 1 plastic bottle (1 PETE)
- Glass jar (baby food jar)
- 1 plastic sandwich bag
- 1 styrofoam cup
- Orange peels

Steps	Teacher actions	Student actions
1.	Pass out sticky notes and ask the students what kind of materials/objects they think can be recycled.	Students write their response to the question and place it on their desk for an informal pre-assessment.
2.	Passes out the shopping bags of trash to each table of students and asks the questions: "What makes these objects pollution? Where do you see them as pollution around our community? What makes them harmful to our environment? Our community?"	
3.		Students discuss with their groups these questions and then a few students share their ideas with the class.
4.	Pose the guiding question and write on the board: "How can you, as third graders, reduce, reuse, and recycle material to reduce the pollution in our community?" (Define <i>reduce</i> , <i>reuse</i> and <i>recycle</i> if necessary.)	
5.		Students work with their table to categorize the objects in the bag as recyclable, non-recyclable, reusable, or reducible.
6.	Once each group has categorized their objects in some way, the teacher asks the groups to share how they categorized the objects and why. "How did you categorize the various objects in your bag? Why did you categorize them that way? How did you know which items belonged in which category?"	
7.	Writes the categories on the board. "How did you know which items were recyclable? What was it about the material of the items or the labels that told you it was recyclable or non-recyclable? Why did you decide that some objects were reusable? Why did you decide some items were reducible? What properties of the objects helped you categorize them?"	A representative from each group shares their categories of trash objects and their categorization strategy. They also share why they think certain objects are/ are not recyclable.

8.	<p>Discusses how objects can be determined as recyclable i.e. plastic material with a triangle on the bottom. Also tells students of recycling centers in the community and the material they do/do not accept. Explain how material and objects are categorized at the recycling center. "Have any of you helped categorize trash at home or at the local recycling center?"</p>	
9.	<p>Asks the students what specific strategies they can take to reduce, reuse, or recycle the appropriate objects in their shopping bag (including the shopping bag itself.)</p>	
10.		<p>Students must sort objects as reducible, reusable or recyclable and discuss with their table specific actions they can take to reduce, reuse or recycle the objects in their bag. They record their ideas on the worksheet provided.</p>
11.		<p>Students discuss with their table group more/broader ways to reduce, reuse, and recycle various objects they and their family use throughout the day. They record these ideas on the worksheet provided.</p>
12.	<p>Writes the strategies on the board. "How can you reuse some of the objects in your bag? How have you seen your parents or others reuse various items? How can you reduce the use of some of the objects, especially those that cannot be recycled? Are there ways to substitute recyclable or reusable items to reduce the use of non-recyclable items? Why is it important to reuse and reduce items that are both recyclable and non-recyclable?"</p>	<p>Students share their strategies and rationales with the class.</p>
13.	<p>To facilitate discussion the teacher asks: "How would this strategy reduce pollution? How could it be more effective—would more people need to be involved? What are the pros and cons of using this strategy to reduce pollution? Why do you think this strategy would/ would not be realistic for our community?"</p>	<p>As a class, students evaluate their peers' strategies on their effectiveness to reduce pollution and how realistic they are for their own community.</p>

	What factors or situations in our community would make this strategy a more realistic way to reduce pollution? Where might this strategy be beneficial and why? How could you/we implement this strategy in our classroom/ homes/ community?"	
14.	Writes these strategies on poster board to display in the classroom.	The class devises/chooses a couple strategies to implement for their own classroom to help reduce pollution.
15.	Passes out sticky notes and asks what materials the students now know can be recycled.	Students respond to the question of what materials can be recycled.

Bibliography:

Teacher Vision: Children’s Science Activities

“Reduce, Reuse, Recycle” printable

http://www.teachervision.fen.com/tv/tvsearch/lowest_grade=103&highest_grade=103&term=24010000000&site=TV&country=us&mode=-bread&n=25&off=50&fmt=3&use_term=24010000000&tab=Subjects&redesign=1

Pennsylvania Department of Environmental Protection

“What can be recycled?”

<http://www.dep.state.pa.us/dep/deputate/airwaste/wm/Recycle/Recywrks/recywrks2.htm>

Guided Discovery Justification:

This activity justifies as a Guided Discovery activity because it aligns with the characteristics of a Guided Discovery activity. The activity is introduced with the teacher providing students with a bag of trash and asking them questions about how those items are polluting their community. Throughout the lesson the teacher acts as facilitator when she periodically stops the investigations to ask the entire class to discuss their findings. She then poses questions to help them continue their investigations through categorization and observation. The teacher promotes group conversation as well as whole group discussion throughout the activity. The students work in their table groups to explore the trash objects and figure out a categorization system as well as strategies to help reduce the pollution in their community—thus answering the guiding question. At the end of the activity, students reflect on the strategies they created as they discuss as a class which strategies are appropriate and realistic. This activity follows the Guided Discovery characteristics because it promotes student learning through hands-on discovery of a guided question. The teacher provides the materials and keeps the students on task while the students work with the given materials to devise a strategy to answer the guiding question.

Final:

To follow up this investigation, the students could create posters to hang in their home or around the community to describe and promote a strategy they devised that would

help reduce pollution. They could then write a persuasive paper explaining the harm pollution causes to our community and persuading the reader to reduce, reuse, and recycle. This activity could also be followed with subsequent lessons on other types of pollution such as air and water pollution.

Questions that may be generated during or after the activity may include: "Why can some plastics not be recycled?" "What happens to the objects when they are recycled?" "What happens to the material that is biodegradable?" Questions may also come about concerning various other objects and whether they are recyclable or not.

The concept of pollution that is addressed in this activity has direct real-life connections. The objects that the students work with are common, every-day trash items and the problem of pollution is one that everyone faces and that everyone has a responsibility to improve. The activity requires the students to think of strategies that they, personally, can implement in their homes and in the classroom to help reduce pollution. The activity teaches the students that each of them contributes to the problem of pollution and that they can also take steps to improve the pollution in their community.