

Let's Ask the Garbage

Objective:

Understand that the solution to the problem of garbage in the oceans lies mainly in each of us.

Learning Skills: Observation, classification, comparing, selection, calculating, inference process and possibilities

Information Base:

Garbage is anything we throw away because it is no longer useful to us.

Marine trash is those objects and substances that have been thrown directly or indirectly into the sea and produce negative effects on marine life.

The **rule of R** is an easy principle to memorize and use:

Recycle: transform a used article into something usable.

Reuse: use an article more than one time, extending its usefulness.

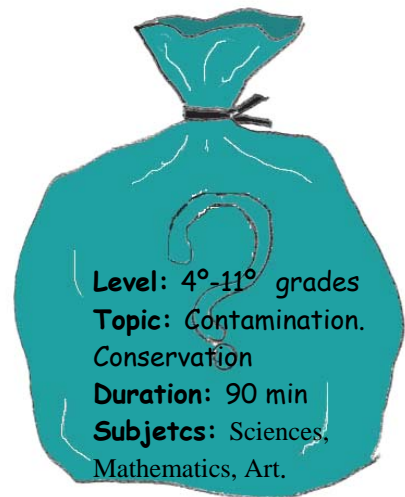
Reduce: use objects that occupy less space when discarded or avoid using unnecessary objects.

Biodegradation is a natural process by which microorganisms disintegrate material converting it into another that can later be used by other organisms. It is important to choose articles that are biodegradable so that they may enter once again into the natural cycle avoiding long term accumulation.

Panama is a marine country with 80 kilometers of coastline and abundant marine life. However because Panama's largest cities are located on the coast and because of the high volume of ocean-going vessels that transit the canal, it is essential for individuals to develop pro active attitudes along with current legislation to address the problem of marine trash.

Vocabulary: Garbage, trash, recycle, reuse, reduce, biodegradable

Materials: Small garbage bags (1 per student, between 12 & 20), gloves, clipboard, pencils, guide sheets, calculator, pamphlets of the **3R's** "What can I do to **Reduce, Recycle, Reuse**", and artistic materials (silicon, glue, tempera, paintbrush, eyes, cardboard, pencils, etc.)



Procedure:

1. Welcome the students and take them to the Crab Beach. Have them sit down and observe their surroundings. Ask them if they see anything that they consider should not be on the beach (5 minutes).
2. When they answer "garbage" ask them to define it. Briefly ask them if they believe this is a serious problem in Panama. Ask them if they think there is a solution to this problem and if they have any idea of the amount of garbage that is generated in the city of Panama daily, (1000 tons/day go in to Cerro Patacon from Panama to San Miguelito. Espino, 2000).
3. Review the terms: marine trash, biodegradation, recycle, reuse, and reduce (10 minutes).
4. Divide the group into pairs giving each pair a plastic bag and gloves. Take them to the beach and give them instructions for the garbage collection (i.e. Which areas are restricted to human visitors, the care they should take with sharp and pointed objects, not to put hands under rocks unless they are sure that there is nothing underneath). Limit the time and a minimum of 7 objects (5 minutes).
5. Regroup in the shade (under the mangrove or nearby). 10 minutes.
6. Give each couple a clipboard and a calculation sheet and have them fill out the blanks using the garbage they collected (15 minutes).
7. Invite them to throw out part of the garbage and select a few pieces that could be used to make a "work of art".
8. Take them to the garbage exhibition and have them compare their estimates in #5 with those of the exhibit.
9. "What do you believe is the answer to garbage?" Discuss results (15-20 minutes).
10. Now they can become artists. Give out materials and go to the bohio.
11. Time permitting; create a small exhibit with the results. Don't forget to label each creation with the name of the school and their grade.
12. Conclude making an analysis of the children's experiences by asking again the question, "Is this a problem? How can we solve it?"
13. Listen to their responses and hand out the pamphlet "What can I do to: Reduce, Reuse, and Recycle?"

Suggestions for the Docent:

Ask the children if they want to take their creation with them or donate it to the exhibition at the Center.

Suggested Classroom Activity:

For 5th grade and higher, the docent (in the classroom) can calculate with the students, the percentage of biodegradable garbage or the exact fraction. You can also sum up the totals of all the group's forms to obtain a more realistic percentage.

Evaluation: The questions from # 12 are the evaluation especially in the activity of how we can help.

References:

Garbage, Cuadernos de Educacion Amiental. Centro Unesco de Catalunya
Mundo Marino, Fundacion para la proteccion del mar (PROMAR) Ano 3, 16 Junio
1994.

Espino Dominquez, Jose Agustin. Conferencia dictada en el Foro Ambiental,
Participacion Ciudadana y Medio Ambiente, organizado por el Municipio Capitalino,
2000.

Let's Ask the Garbage

Names of participants

Date:

1- Classify the objects and put the total number of each category on the chart.

MATERIAL	<i>Plastic</i>	<i>Glass</i>	<i>Rubber</i>	<i>Metal</i>	<i>Wood</i>	<i>Foam</i>	<i>Oranic Matter</i>	<i>Card- board</i>	<i>TOTAL</i>
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2- Total de number of objects that are **biodegradable**?

3-List the biodegradable materials from the chart

4- Of all the collected materials:

How many objects can we reuse? _____

How many objects can we recycle? _____

How many objects could use have been avoided? _____

5- Guess how long it takes nature to **decompose** the following objects which travel in the ocean: (Indicate if hours, days, weeks, months, or years)

Plastic Bags _____ Glass Bottle _____ Rubber Boots _____

Aluminum Cans _____ Metal _____ Foam _____