Recycling Resources

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Dissecting Drinks

Try this experiment to learn more about the drink boxes that you throw away.

Materials

- Empty juice boxes
- Scissors
- Small pieces of paper
- Pieces of paper towel
- Pipettes
- Small plastic cups with water
- Roll of paper towel
- Pencils
- Paper or science notebooks

Procedure

1. Hold up an empty drink box and ask the class what happens to the box when they are finished drinking it and throw it in the garbage.
2. Explain that they usually end up in landfills and ask the class if they think that there is a way that drink boxes could be recycled.
3. Explain that you are going to perform an **experiment** to learn more about drink boxes to see if it is possible to reduce the amount of waste that ends up in landfills.
4. Have the students work in pairs and provide each with an empty drink box, pair of scissors, small piece of paper, piece of paper towel, a cup, a pipette, a pencil and a piece of paper or their science notebooks.
5. Ask them to cut the juice box in half and take a look at what it is made of. Depending on the age and ability of the students you may want them to record their **observations** on a sheet of paper or in their notebooks.
6. Have the students take a piece of the juice box, a piece of paper towel and a piece of paper and place the three items in front of them on their desks.
7. Ask them to take the pipette or eyedropper and place a couple of drops of water from their cup of water on each item and watch what happens. Ask them to record their **observation**s in their notebooks. You may also want to ask them at this point what they think the drink box is made of and explain that these are their **hypotheses** or best guesses and that you are going to conduct an **experiment** to determine if they are correct.
8. Have the students peel apart the inside and outside layers of the juice box to get a better idea what it is made of. Depending on the age and ability of the group you may need to ask them questions like - What do you see? What do you think it is made of?
9. Ask the students if they think it is possible to recycle juice boxes after they have conducted this **experiment**. Have a discussion as a group and talk about the

possibility to recycle drinking boxes but the time that would be involved in the process because of the layers that make up the box are paper, waxed paper and aluminum.

10. Collect the materials from the students

Explanation

Even though it may be possible to recycle drink boxes it would be a long and tedious process because of the different layers that make up the boxes. One way to help reduce the amount of waste that is made by bringing drink boxes everyday to school for lunch would be to bring drinks in reusable containers that can be washed and reused.

Garbage Audit

Try this activity to determine how much garbage you accumulate as a classroom in a week.

Materials

- 1 bathroom scale
- Plastic bags

Note

You can limit the type of garbage you want to collect if you are worried about smells in your classroom You may want to consider only collecting things like paper and plastic. Or you can use different bags for different types of garbage and keep the one with food products tightly sealed.

Procedure

Explain to the class that you are going to try an activity to determine how much garbage your classroom accumulates in a week. Tell them that rather than putting their trash in the regular container or in the recycling bin you will be collecting it in designated bags.

1. Depending on the age and ability of the group you may also want to have them estimate how much garbage they think they will collect in a week in terms of pounds. They may need a point of reference, which you can establish by weighing the pail of garbage that you have in your class at that time.
2. After one week has passed select one student to stand on the scale and record their weight on the board.
3. Next, hand one of the garbage bags you collected to the child and record their new weight.
4. Subtract their weight from the weight of the child and the garbage bag and record the result on the board.
5. Continue this process until all of the bags you collected have been weighed.

Explanation

Americans throw away close to 4.3 lbs or 2 kg per person daily. This is a lot of waste that ends up in landfills. The activity above helps to illustrate to students in a concrete what the magnitude of the waste that we accumulate on a daily basis.

Paper Beads

Materials:

- Bright colored paper from magazines, gift-wrap or catalogues
- Button
- White glue or glue stick
- Scissors
- String, yarn, or fishing line

Procedure:

1: Cut strips of paper 2.5cm (1 inch) wide and 8cm (4 inches) long to make beads. Cut as many strips as you want beads.
2: Spread glue over half of the strip.
3: Roll up the strip at the unglued end so that a hole is left in the middle. This hole should be big enough to fit your string or fishing line. Continue rolling until the strip forms a bead
4: Once your beaded string is longer than 36cm (14 inches) cut 3 more strips of paper 2.5cm (1 inch) wide and 20cm (8 inches) long and roll them to make large beads.
5: Tie the end of the string to the button.
6: String the three large beads together at the other end and loop them to form a triangle shape. Tie the string to keep this shape.
7: Slip the button through this triangle to wear your beaded string as a necklace, or offer it to someone special!

Explanation

You just performed an act of recycling! Old magazines and papers can get a second life when we are creative. The act of gluing strips of paper into rolled beads can produce a beautiful work of art instead of adding more waste to landfills. Use your creativity to recycle!

Cross-Curricular Connections

Math

- Take the data from the "Garbage Audit" Activity and chart it in a graph divided by the types of garbage you collected.
- Integrate vocabulary words into math problems – for example, "Amanda threw away 1 bag of garbage on Monday, 2 on Tuesday, none on Wednesday and Thursday and 1 on Friday. How many bags did she throw away in total?"
- Get some data from your local recycling office about what types of materials are recycled and the percentage break down for each. Use these figures to create pie charts and help teach about fractions.

Language Arts

- Have the students write a story about the life of a piece of garbage – from before it was trash through to its experience in a landfill or being recycled.
- Challenge your students to write articles for a newspaper about the initiatives your class or school is taking to help reduce waste.
- Ask your class to write poems about how people can reduce the amount of waste that they produce.

Art

- Challenge your students create a pamphlet to explain to people why they should recycle and what they can do to reduce the amount of garbage that is thrown away. Encourage them to be creative and include colorful images in their brochure.
- Get a book out of the library and recycle some paper as a class. A good resource is http://www.exploratorium.edu/exploring/paper/handmade.html.*
- Have the class collect items from home that were destined for the garbage, and then have them utilize these objects by making something new.

Social Studies

- Have your students prepare projects on the history of garbage. A good resource can be found at http://www.astc.org/exhibitions/rotten/timeline.htm.*
- Investigate the countries or states that are more environmentally aware and have extensive recycling programs. Have the students investigate the types of programs that are in existence.

Field Trip Suggestions

- Visit a recycling facility.
- Invite an environmental scientist involved in the field of waste management to visit the class.
- Visit a landfill.
- Have a local environmentally friendly store visit the classroom and discuss their different products or programs.

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* Mad Science is not responsible for the content of this site.

BOOKS

There are numerous books available on garbage and recycling. Below are some suggested resources for students in Kindergarten to Grade 6.

Experiments & Activities

Title: Recycle: A Handbook For Kids
Author: Gail Gibbons
Publisher: Little Brown & Company
ISBN#: 0316309435
Description: *This book provides information for children about how to separate different types of materials and how they are recycled into other products. Projects and activities related to the topic of recycling are included.*

Title: Earth Book for Kids: Activities to Help Heal the Environment
Author: Linda Schwartz
Publisher: Learning Works
ISBN#: 0881601950
Description: *Filled with ideas for arts and crafts projects, experiments, and experiences that encourage children to enjoy and heal the environment. Landfills, recycling and pollution are a few of the topics covered by this book.*

Storybooks

Title: The Great Trash Bash
Author: Loreen Leedy
Publisher: Holiday House
ISBN#: 0823416348
Description: *When Mayor Hippo of Beaston discovers that his town has a litter problem, he and the animal residents examine various disposal methods. This is a great story to help teach children about the impact of garbage on their environment.*

Title: The Garbage Monster
Author: Joni Sensel
Publisher: Dream Factory Books
ISBN#: 0970119526
Description: *When Jo is slow to take out the trash one evening, the garbage comes to life and hauls her outside instead. The beast threatens mayhem throughout the neighborhood, but Jo is undaunted. She plucks him limb from limb, finding another use for his cardboard head, fibrous fanny, and other various parts. By the time she is done, Jo sees how recycling can be a resourceful way to put the beast back in his place-and make an unpleasant chore more fun.*

Title: Too Much Garbage
Author: Fulvio Testa

Publisher: North South Books
ISBN#: 0735814511
Description: *Two boys, sent to take out the garbage, en-counter piles of trash by the curb. As they explore the city, they discover garbage everywhere-mountains and mountains of garbage until the world seems like a sea of trash.*

Teacher Guides

Title: Eco-Fun
Author: David Suzuki and Kathy Vanderlinden
Publisher: Greystone Books
ISBN#: 1-55054-823-9
Description: *A book packed with activities to help teach children how to be environmentally friendly while learning the science behind the amazing ways that nature works. Includes diagrams and detailed instructions for all activities.*