Standard Indicator
2.1.7

Trash Inventions

Purpose

Students will construct an invention out of re-usable and recyclable items.

Materials

For each pair of students: trash (lids, jars, 2-liter bottles, milk jugs, paper, egg cartons, cups, magazines, paper towel rolls, cardboard boxes, etc.)
For the class: glue, string, tape, boxes for recycling

Activity

A. Introducing the 3Rs: Reduce, Reuse, Recycle

1. Distribute a piece of paper to each student and ask where they think paper comes from.
2. Show students a picture of a tree or point to one outside. Explain that the more paper we use, the more trees have to be cut down.
3. Have students discuss ways that we could not consume as many trees. Discuss with students that one way to help the trees is to not use so much paper.
4. Have students brainstorm ideas of how to limit paper use. For example, students might start using half-sheets of paper for assignments instead of full sheets.

B. Trash Invention: Reuse

1. Another way to help trees is to reuse paper. Have students brain storm ideas of how to reuse paper. For example, if a student has already written on one side of paper, they can simply flip over the paper and write on the other side.
2. Discuss that another way to help is to reuse items that would normally be thrown away.
3. Inform students that this will be their challenge today: make something useful out of trash.
4. Set out "trash" materials at each table and have students work in pairs to design something useful to make out of the trash. Have students use all or some of the materials.
5. Have students sketch what they think their invention will look like before they construct it. Tell students they can borrow additional materials such as glue, string, or tape.

(continued)

connecting across the curriculum

Mathematics
Challenge other classes to a "trash-free" picnic. Weigh each class' trash on a small scale. Create a pie graph and chart each class's waste.

EXTENDING THE ACTIVITY

For students who want a challenge, have them attempt to make recycled paper from the recipe on the Black Line Master (BLM) *Recycled Paper*.

Standards Link
2.6.3

Activity (continued)

6. Have each pair of students come up with a name and purpose for the invention and then allow the students to construct their inventions.

C. Communicating Their Inventions

1. Have each group share with the rest of the class the name of the invention, the materials used to make the invention, as well as its purpose. Have students demonstrate how one would use the invention, if needed.
2. Allow students to ask questions about each invention and have the inventors answer accordingly.

D. Homework

1. Take a walk around the school and help students notice what can be recycled. Pick up trash along the way and discuss whether or not the items can be reused or recycled. Have students investigate where recycling occurs in the school. Ask students: "Is it in the cafeteria? The copy room? In the office?"
2. Have students start a recycling center in the room, if one does not already exist. Keep several boxes for recycling in the room (e.g., one box for paper, one for plastic, one for cardboard, etc.).
3. Have students decorate the boxes.

Questions for Review

Basic Concepts

After students have made their invention presentation, ask them the following:

📖 What are some items that can be recycled or reused?

📖 What are some ways that things can be recycled or reused?

📖 What can you do to decrease the amount of trash you produce?

Name: _____

Recycled Paper

Materials: aluminum foil, cornstarch, crayons or markers, large jar with lid, measuring cup, metal baking pan, newspaper, large pieces of plastic (optional), pencils, scissors, tablespoon, wooden spoon, hot water

Directions:

1. Cut out a 5" x 10" square of aluminum foil.
2. Fold the aluminum foil in half and, using a pencil, poke 9 holes in the foil, in rows and columns of 3, equal distance apart.
3. Cut the newspaper into thin strips, and continue to tear it into tiny pieces. Shred enough newspaper to equal 2 cups, tightly packed.
4. Place the newspaper pieces into the jar and fill the large jar half full of hot water.
5. Stir the mixture in the jar, then secure the lid and let stand, shaking occasionally for 3 1/2 hours. (Stirring the mixture and shaking it dissolves the newspaper pieces and makes it gooey and pasty, which is the consistency you want.)
6. Add more hot water if the newspaper absorbs too much of the initial water in the jar.
7. When the newspaper has disintegrated, pour the mixture into the baking pan.
8. Mix 4 tablespoons of cornstarch with 1/2 cup of hot water in a measuring cup and stir until the cornstarch has dissolved.
9. Pour the cornstarch mixture into the baking pan and mix.
10. Take the piece of foil, now 5" x 5", and place it over the mixture.
11. Press down on the foil with your hands until the piece of foil is covered with the paper mixture.
12. Take the mixture-covered foil out of the pan and place it on a covered table.
13. Press flat-handed on the top of the mixture to strain the excess water out through the holes in the foil.
14. Pinch holes that may appear in the mixture together and continue to squeeze the water out.
15. Allow the mixture to sit a minimum of 3 hours to dry before removing the foil. (Letting it sit overnight would ensure a dry piece of paper.)
16. Peel the foil off of the mixture that is now recycled paper. Use scissors and trim the edges of the paper and decorate the recycled paper using crayons or markers.

Recycled Paper

Teacher Directions

Allow students to complete this activity at home or in the classroom.

Answer Key

Not applicable.