Reduce - Reuse
Crayon Trash Stash

SUGGESTED GRADE LEVEL: 2-3

OBJECTIVE:
The students will:

- Look at ways resources are wasted
- Consider alternatives to “trashing” their used, broken and worn-out items.

Reusing things is an important lesson in reducing garbage. While it may seem easier to just throw things away, it can be fun to invent ways to reuse them. Crayons are simple items to use in demonstrating just how easy and fun it is to reuse things that you might otherwise throw away. Some crayons are made from the fat or tallow of hogs or cattle. This is a by-product, or a reclaimed product, from the livestock industry. Other crayons are petroleum based.

In this lesson, students will sort their crayons into two piles; perfect (in new condition) and not perfect (broken). The broken crayons will be stashed as trash. Students will then be given the task of creating a picture of a rainbow with only the perfect crayons remaining. The students will speculate what their pictures might have looked like if more crayons had been available. Other items commonly thrown away will then be re-evaluated for their reuse value. Vocabulary includes trash, recycle, reuse, and landfill.

TIME:
30 to 45 minutes

MATERIALS:
Student’s crayons or a large box of used crayons

PROCEDURE:
1. Distribute a handful of crayons to each student. Some crayons should be new and some should be used, worn, and broken. Ask the students to sort their crayons into two piles: New and Broken/Used.

2. Ask them to describe their most imperfect crayon. List responses on the board to be used later. Tell them that their imperfect pile of crayons is “trash”, and they are to stash their trash in the landfill (inside their desks or into a sack).

3. Now, using only the “perfect” crayons, students are to create a “perfect” rainbow and sky picture. Do not let students share crayons.

4. Display the rainbow pictures. What problems occurred because of the limited resources? Ask:
- Did you wish you had more colors?
- Do you wish you had not thrown away the imperfect colors?

Do we sometimes throw other things away that we think are imperfect?

Name some of these things and record a list on the board. Why do we throw things away? Make a list of reasons. Look again at their words that described the imperfect crayon. Are these some of the same words we use to describe the items that we throw away?
5. Explain that once something is thrown away and taken to the landfill, it usually stays there forever, but in this case, you will have the privilege of reclaiming the crayons from the landfill. Let students add to their pictures. Once this is done, the students will be given the opportunity to rethink how these crayons can be reused or recycled. Some ideas are to make Sun Catchers or Candles (See Extension Activities.)

EXTENSION ACTIVITIES:
1. Plan a “Trash to Treasure Fair” for the class. (Suggested categories for entries: an item recycled, an item repaired, an item reused.) The rainbow pictures can be turned into advertising posters and awards can be made from “throw-away” materials. (A visit to a thrift or second hand store would be useful).
2. Make Sun Catchers
   You will need: used crayons, medium hand kitchen grater, wax paper, irons, pad of newspapers, brown paper sack cut open. (Ask for extra adult volunteers on this day. Perhaps they could bring their own irons.)
   - Have the students remove the paper from crayons.
   - Ask an adult volunteer to grate the crayons into separate colors. This could be done ahead of time to save time. Crayon shavings can also be done using scissors.
   - The students will sprinkle crayon shavings on top of a sheet of wax paper, keeping colors separate.
   - Cover with a second sheet of wax paper, making a sandwich.
   - Prepare a pad of newspaper to protect surface from the iron.
   - Cut open a brown paper bag and lay on top of newspaper for a blotter.
   - Put the wax paper sandwich on brown paper and newspaper pad.
   - Cover sandwich with another piece of brown paper.
   - Using a medium hot iron, melt the two layers of wax paper together. This will also melt the crayons, creating a stained glass effect.
   - After cooling, cut the Sun Catcher into a shape (butterfly, fish, flower, etc.) either by tracing a shape first or by cutting freehand. (A mobile of many shapes can be made or they may be hung in a window.)
3. Make a Crayon Candle
   You will need: candle wax, used crayons, candlewicks, pencil, baby food jar, soup-size tin cans, pot holders, electric frying pan.
   - Clean and dry baby food jars.
   - Using a four-inch piece of candlewick, tie the wick in the middle of a pencil. Rest the pencil across the jar opening with the candlewick hanging inside the jar.
Students are to remove paper from crayons and sort by colors into tin cans. Add candle wax to each color to fill the can one-half full.

Set cans in the electric frying pan on low to medium heat. When melted, pour a ½ to ¾ inch layer of color in each jar.

Let cool until the wax has set enough so that a layer of another color can be poured on top. Continue to layer the colors until the jar is full.

After candle is completely cooled, students can trim candlewick to ½ to ¼ inch.

Prepare a tag stating that this gift was made from reused glass and recycled crayons and tie it around the candle. This is a nice gift for Mother’s Day.

SOURCE:
**My Bag**

**SUGGESTED GRADE LEVEL:** 2-3

**OBJECTIVE:**
The students will:

- Identify trash as recyclable, reusable, or repairable;
- Demonstrate the principle of reduction.

Each person (including students) generates about four pounds of household trash each day. Through recycling or reusing, much of this trash can be removed from the waste stream and not disposed of in our landfills or incinerators. In this activity, students look into a typical bag of household trash and decide which items can be recycled, reused, or repaired and which ones must be thrown away.

Vocabulary includes recycling, trash, reduce, reuse, and estimate.

**TIME:**
30 to 45 minutes

**MATERIALS:**
Four pounds of clean, selected trash (include items that can be recycled, reused and/or repaired. Also have items that can only go in the landfill), four clean plastic or paper bags, and a scale (kitchen or bath)

**PROCEDURE:**
1. Show the students the bag of trash you have prepared and ask them to estimate its weight. Call on several students to estimate from just looking at the bag and then from holding the bag. Weigh the bag (if using a bath scale, show the students how to weigh the person with the trash bag, weigh the person without the trash bag, and then subtract to obtain the weight of the trash bag. Your answer should be very close to four pounds.) Tell students that is how much trash each one of us generates each and every day. (Students may find this unbelievable. Remind them that this figure includes trash from all their meals, classroom waste, etc. However, it does not include any of the waste from business and industry.)

2. Make four cards marked: recycle, reuse, repair and landfill/incinerator. Tape these cards onto the four bags. Discuss what these words mean. Find out and discuss with the class what is recyclable in your community. (Visit www.recycletompkins.org for Curbside Recycling guidelines in Tompkins County.)

3. Have the students open the trash bag and tell what each item is used for and why it was purchased. Discuss if the product was necessary or not. Now that the item is trash, was it worth buying the product in the first place? Remind students that we can reduce the amount of trash we throw out by only buying what we really need.
REDUCE-REUSE

4. Have students divide the contents of the trash bag into the proper categories – recycle, reuse, repair and landfill/incinerate.

5. After classifying, reweigh the items in the landfill category and discuss how much trash was saved from the landfill/incinerator.

EXTENSION ACTIVITIES:

1. Older children may play a recycling relay race. Divide the class into teams. Each child picks an object from a bag of mixed clean trash and delivers it to a box or bag labeled “recycle,” “repair” or “reuse.” Each student must justify his or her decision.

2. Using a bag of clean, mixed trash, hand one trash object to each student, and have all students stand together in a group representing the waste stream. The teacher can be the trash collector who will take the trash away to a landfill, one item at a time. Tell students that, at a landfill, they will be put into a specially lined hole in the ground and covered with soil. They will remain there forever. It’s dark, damp and there is no light or air, so no trash decomposes. Ask if anyone really wants to go to the landfill. If they don’t want to go and want to reuse the resource, have them think of a way the item can be reused or recycled. Try to save all the items in the waste stream by thinking of alternatives. Discuss ways to change the items that cannot be recycled or reused. Continue until all the students/trash items have been rescued from the landfill.

3. Have students (and teacher, too) tie a plastic bag to their waists. Each student is to place in the bag all the class waste, clean and dry lunch waste, and any other waste each individual is responsible for generating. Compare the amounts at the end of the day or week. You could try this both before and after this lesson to demonstrate how the students’ habits may change.

4. As a math exercise, create a chart graphing the weight of the four bags after the four pounds of trash has been sorted into recycle, repair, reuse or landfill/incinerate.

Note: Your results may vary depending on the type of trash you select and what is recyclable in your community. There are no right or wrong answers.

5. Have students complete the handout If Bagging Trash is Your Game, This Match is for You.

SOURCE:
South Carolina Department of Health and Environmental Control. 2001. 
*Action for a Cleaner Tomorrow: A South Carolina Environmental Curriculum* Supplement. Columbia, SC.
If Bagging Trash is Your Game, This Match is for You.

Match each word on the left with the phrase that best describes it.

_____ Trash
______ Litter
______ Reuse
______ Natural Resources
______ Landfill
______ Recycling
______ Paper
______ Reduce
______ Compost

A. To find a new use for something instead of throwing it away.
B. A recyclable material made from trees.
C. To buy less and to throw away less trash.
D. Leaves and grass clipping that are broken down by natural forces and can be used on gardens.
E. Our garbage, all the things we throw away.
F. Trash that is in the wrong place, such as on the ground or in the street.
G. A process that makes something new out of something old.
H. A special place where trash is buried.
I. Things that are found in nature that we must have to live.
Classroom Conservation

SUGGESTED GRADE LEVEL: K-3

OBJECTIVE:
Students will be able to suggest ways that paper and other materials can be re-used or recycled in the classroom.

TIME:
Variable

MATERIALS:
- Waste paper generated in the classroom.
- Any of the following: grocery bag, box, magazine, gift wrap paper, cards, newspaper, lunch bag, milk carton.

PROCEDURE:
For one week, ask students to save all waste paper generated by class activities. Assign groups to separate papers into two stacks daily: one that has been completely used (e.g. on both sides) and one for paper that could be used again.

At the end of the week, compare the amount of paper in the stacks and lead a class discussion on “Are we wasting paper?” Give each group some of the reusable paper, pencils and one of these articles: grocery bag, box, magazine, gift wrapping paper, cards, newspaper, lunch bag, or milk carton.

Ask each group to list on paper all the ways they can think of to reuse the article, or list alternatives to these items that could be used over and over again (e.g. reusable containers instead of sandwich bags, thermos instead of milk carton, etc). After ten minutes, share the ideas. Repeat the exercise with items used in the classroom.

EXTENSION ACTIVITIES:
1. Maintain a room recycling center. Make gifts, models, table decorations, collages, bookmarks, name tags, etc.

SOURCE:
Trash Goes to School
(http://cwmi.css.cornell.edu/TrashGoesToSchool/TrashIntro.html).
“Use-It-Again”

SUGGESTED GRADE LEVEL: K-3

OBJECTIVE:
To introduce students to the concept of reuse as an alternative to disposal.

TIME:
20-30 minutes

MATERIALS:
Large peanut butter jar or coffee can, large box, and craft supplies (e.g. scissors, glue, paint or crayons, magazines to clip photos from).

PROCEDURE:
Ask the children how many uses they can think of for a large peanut butter jar or a coffee can. Write them on the board. Tell the children that many things can be used again, or reused in the same or in different ways.

Set up a “use-it-again” box for your classroom. Have the children paint, color, or paste pictures on it. Suggest that the children place in it all materials that can be reused again. Encourage the children to contribute to the “use-it-again” box on a daily basis. For example, paper that has only been used on one side can be used again for drawing paper, quiz sheets, etc. Craft items from home (egg cartons, margarine tubs, thread spools, etc.) can also be brought in to make collages and other art projects or can be donated to the Sciencenter’s Reinvention Station (607-272-0600). For more ideas on how to re-use materials, contact the Tompkins County Solid Waste Management Division at 607-273-6632 to request a copy of The Re-Directory: A Guide to Reuse in Tompkins County.

EXTENSION ACTIVITY:
Create a “swap box” to show students that some things that are thrown out have value. Ask students: What might there be in one person’s trash that would not be trash or waste to someone else? Explain to the children that one way to make something last longer or extend its “life” is to share it with someone else once you have outgrown or grown tired of it. As a homework assignment, ask the children to write a short story, real or imaginary, describing something valuable that they found buried in the garbage. The stories should include accounts of the previous owners and reasons why the objects were thrown away. Set up a “swap box” where the children can bring in old toys or objects that might be thrown out. They can trade an old toy for another that is new to them. An alternative would be to set up a collection box for a local Goodwill or Salvation Army collection.
Trash or Treasure

SUGGESTED GRADE LEVEL: 4-5

OBJECTIVE:
Students will create ways to reduce solid waste by reusing some things that might be thrown away. Vocabulary includes reuse, recycle, compost and waste stream.

Studies at selected landfills indicate that almost 60 percent of what we throw away still has value and could be reused, recycled or composted. Diverting resources from the waste stream begins with recognizing the resource potential of what we throw away each day.

TIME:
One or two class periods

MATERIALS:
Reusable objects, the poem Hector the Collector by Shel Silverstein (from his book Where the Sidewalk Ends), worn clothing or patchwork pieces (have students bring to class), pictures of quilts

PROCEDURE:
1. Read the poem, Hector the Collector by Shel Silverstein. Show the class two examples of reused objects; an object you are reusing for its original purpose (such as a canvas lunch sack) and one for which you have created a new use (such as a bottle or jar that is reused as a flower vase).

2. Show the worn clothing items and patchwork pieces that you and the students brought to class.

3. Share pictures of quilts. Ask:
   - Where do you think the individual patches may have come from? (Such as red calico could have been a shirt; denim from a pair of jeans).
   - Why did people in the past make patchwork?
   - In what ways has patchwork become part of our history? (Different patterns represent different time periods or styles.)
   - In what other ways have people reused items that otherwise would have been thrown out?

4. Brainstorm ways to reuse the clothing and fabric scraps students brought to class. Suggestion: make puppets, quilts, pot holders, braided rugs, books, collages, fabric flowers, purses, pillows or bookmarks.

Other ideas for reusing fabric:
- Book covers – Fabric scraps can be used for book covers by wrapping books and gluing fabric in place.
- Money Keepers – Fold fabric scrap in half. Have students sew up sides with yarn, creating a pouch.
- Decorate boxes with fabric scrap designs - Use the boxes to collect recyclable materials. Keep a decorated box in the classroom for paper collection.
EXTENSION ACTIVITY:
Have students think and write about other things besides fabric they have thrown away that could have been used again or made into something new.
Let’s Take A Trash Flash Through Time

You are walking through a quiet, beautiful forest. You feel happy to be in such a peaceful, lovely place as this. You come to an opening under a canopy of leaves, and in the rays of sunshine you see a strange and unexpected sight. It looks sort of like a car, sort of like a thing one would ride at a carnival. It looks like a whole lot of fun, whatever it is, so you open the door and step inside a most miraculous little machine.

There are lights, buttons, levers, graphs, clocks, dials, calendars, and computer screens ... and you know at once ... this is a time machine!

Carefully following the instructions on the screen, you fasten your safety belt, set the clock in reverse, and wait. Dials spin, buzzers sound, and you feel yourself being thrust back into your seat. On the big computer screen above your head, you see events in time come to life: the first trip to the moon; World War II planes flying over Europe; George Washington crossing the Delaware during a harsh winter storm; the Nina, Pina and Santa Maria ships heading westward. Wait! It’s going too fast! You’ve got to stop this thing! Your finger finds a button marked STOP. You press it and the year 1250 flashes above. The machine stops! And the door opens slowly behind you...

It is a misty morning on a cobbled stone street, fog is rolling in and there is a chill in the air. Signs hanging above the shops let you know you are in London, England. The clopping hooves of a horse-drawn cart can be heard in the distance. Squealing piglets are being joyfully chased by children running all about.

Then from above, SPLASH! PLOP! Out of an open window two stories up comes a shout “GARDY-LOO!” followed by a heavy bucket of garbage. Vegetable peels and table scraps fall right onto the street below. It barely misses you! And now here come the pigs, rushing to the scene to investigate the tasty morsels of garbage they might eat. Can you imagine, people throw garbage out of their windows and onto the streets. Pigs run freely about to eat whatever is edible.

“GARDY-LOO!” The call comes again. Oh! No! Look out. Running, ducking and jumping over slippery, slimy garbage, you head back to the time machine, set the dials to the present, and hit the buttons again. You feel yourself being flung forward in your seat. Dates fly past on the dial, and before you know it, your back, right where you were when you found the machine.

WHEW! What a trip! The door opens behind you, but you remain seated as your mind continues to spin with the memory of your adventure.

Just think of all the garbage! It’s good to be back home.
EXTENSION ACTIVITIES:
1. Invite two or three senior citizens to share stories about what life was like when they were students in school. Have them talk about garbage, things they threw away and things they reused and repaired.

2. Have the students fill out a survey today as if they were adults talking to 4th and 5th graders in the future. Students would describe themselves and their life-style habits as they are today. Try to have copies of all the surveys from this lesson included in the school archives or time capsule.

3. Complete the questionnaire, Trash Flash to Today. Answers are included in italics.

4. Have the class visit a nursing home to talk with the residents about how the world has changed during their lifetimes.

Can you answer these questions?

1. Is most of our garbage:
   a. buried in landfills,
   b. burned,
   c. reused; or
   d. recycled?

   (In Tompkins County, 22,083 tons of garbage were landfilled in 2004 at Seneca Meadows landfill in Waterloo, NY. The County Recycling and Solid Waste Center processed 17,232 tons of recyclables, including yard waste.)

2. Are dumps and municipal solid waste landfills the same? (No, municipal solid waste landfills have liners to protect the soil and groundwater nearby; dumps are illegal.)

3. How much of our trash is packaging? (32 percent by weight and 30 percent by volume.)

4. To recycle means to process waste materials into new products. True or false? (True. For example, recycling newspaper into cardboard boxes, or melting down used glass jars to make new ones.)

5. If you could change something about the way you recycle, what would it be?

SOURCE:
South Carolina Department of Health and Environmental Control. 2001.
Action for a Cleaner Tomorrow: A South Carolina Environmental Curriculum Supplement.
Columbia, SC.
Trash Flash to Today!*

Can you answer these questions?

1. How much trash does each person in S.C. throw away daily? (four pounds can be attributed to each individual, 8 pounds per person per day includes all wastes such as manufacturing wastes combined with household wastes.)

2. What material is thrown out more than any other? (Paper makes up 40 percent.)

3. Is most of our garbage:
   a. buried in landfills,
   b. burned
   c. reused; or
   d. recycled?
   
   (In South Carolina, 5.8 million tons of garbage was landfilled in 1998. In some areas of the Low Country, garbage is incinerated at a waste-to-energy facility.)

4. Are dumps and municipal solid waste landfills the same? (No, municipal solid waste landfills have liners to protect the soil and groundwater nearby, dumps are illegal.)

5. How many aluminum cans are thrown away each year rather than recycled? (34.8 billion. And imagine that each can is half filled with gasoline, because that's how much energy is lost! More than 80 percent of aluminum beverage cans are recycled.)

6. How much of our trash is packaging? (32 percent by weight and 30 percent by volume.)

7. To recycle means to process waste materials into new products. True or false? (True. For example, recycling newspaper into cardboard boxes, or melting down used glass jars to make new ones.)

8. If you could change something about the way you recycle, what would it be?

* Sources: U.S. EPA and S.C. DHEC

Try life in the good old days. Try to live one day as your grandparents might have. Remember, no television, no microwave and no convenience products.
Trash Flash Through Time: Older and Wiser Survey

Begin by explaining: We are conducting interviews with older generations so we can learn how people handled their garbage and resources in the past. Your stories are valuable to our research. Thank you for agreeing to do this interview. Please answer all of the questions for the time period when you were my age.

1. What is your full name? 

2. Where were you born? 

3. What was the year when you were my age? 

4. What did you do for fun? 

5. How old were you when you got your first TV? 

6. What chores did you do? 

7. How did you get to school? 

8. What toys did you have? 

9. What were they made of? 

Food: 
10. How was your family’s food kept fresh? 

11. How did store-bought food come packaged? 

12. What did you do with the packaging or container when it was empty? 

13. Did you carry your own lunch? ____________________________________________
In what containers? ______________________________________________________

14. If you ever brought food home from a restaurant, how was it packaged? ____________
______________________________________________________________

**Paper:**
15. What did you do with old papers, magazines, and books? ________________________
______________________________________________________________

16. Did you use paper napkins, tissues or towels? _______________________________
If not, what did you use? _____________________________________________

17. Did stores provide paper shopping bags? _________________________________

**Glass:**
18. What types of glass containers did you have (jars, soda bottles, milk bottles, etc.)?
______________________________________________________________
______________________________________________________________

19. Did you throw them away, reuse or recycle them? ____________________________
______________________________________________________________

**Aluminum:**
20. Did you have aluminum? ________________________________________________
For what uses? ______________________________________________________

21. Did you throw it away? ________________________________________________
Tin cans:
22. What kinds of food did you buy in cans? ______________________________________

23. What did you do with the cans when they were empty? ____________________________

Plastic:
24. Were there plastic containers? _________________________________________________

What came in them? ____________________________________________________________

25. What was in your first plastic bottle? ____________________________________________

Garbage:
26. Where was your garbage thrown? ______________________________________________

27. Was any of it recycled or reused? ______________________________________________

Wrap-up Questions:
28. Did people talk about recycling and conserving resources then? __________________

29. How do you think people today have changed in their attitudes? __________________

30. Would you rather be a child in today’s time or the times when you were a child? _______

THANK YOU!
“Throw Away Society”

SUGGESTED GRADE LEVEL: 4-6

OBJECTIVE:
To think about garbage disposal and the amount of trash that we produce. To increase awareness about solid waste and how it relates to each one of us.

TIME:
20-30 minutes

MATERIALS: *Throw-Away-Society* worksheet.

PROCEDURE: Ask students to fill out the questionnaire on the next pages. Discuss answers and the effects on the environment.

Answers: 1-C, 2-B, 3-B, 4-C, 5-C, 6-B, 7-C, 8-C, 9-A, 10-D, 11-B

FOLLOW-UP:

1. Write a report or fact sheet using this information

2. Take it home and share with the family.

SOURCE:
*Trash Goes to School*
(http://cwmi.css.cornell.edu/TrashGoesToSchool/TrashIntro.html).
Throw-Away-Society

Do you know what the term “THROW-AWAY-SOCIETY” means? The questions below will help you realize just how much we are throwing away. See how much you know about our “throw-away-society”.

1. How much garbage do you think a typical American family of four is responsible for in one week?
   a. about 20 pounds
   b. 50 pounds
   c. 80-150 pounds
   d. 250 pounds

2. How much garbage is that for each person for one day?
   a. 1 pound
   b. 3-4 pounds
   c. over 10 pounds
   d. 22 pounds

3. What fraction of our garbage is paper?
   a. 1/10
   b. 1/3
   c. 1/2
   d. 3/4

4. How many pounds of glass do you think you use in one year?
   a. 5 pounds
   b. 50 pounds
   c. 500 pounds
   d. 1000 pounds

5. What does BIODEGRADABLE mean?
   a. Burn
   b. Use again
   c. Breakdown or rot
   d. Throw away

6. What does RECYCLE mean?
   a. To burn
   b. To make into a new product
   c. To break down
   d. To throw away new a product
7. How much paper does a family of four throw away in a week?
   a. 20 pounds
   b. 6 pounds
   c. 10 pounds
   d. 60 pounds

8. How much food (scraps) does a family of four throw away in a week?
   a. 50-60 pounds
   b. 5-10 pounds
   c. 10-15 pounds
   d. 25-30 pounds

9. Look carefully at this list?
   7 million cars
   7 million T.V. sets
   62 billion cans
   43 billion bottles
   65 billion tops (cans & bottles)
   70 million tons of paper

   The list is probably…
   a. What our country will discard in one year
   b. What our town will discard in one year
   c. What our school will discard in one year
   d. What our family will discard in one year

10. Which of the following materials found in your garbage can be recycled or composted?
    a. Paper
    b. Food
    c. Metal
    d. All of these

11. Which of these is NOT toxic (poisonous)?
    a. Nail polish remover
    b. Vinegar
    c. Furniture Polish
    d. Weed Killer
    e. Insect Spray