



Title: We Are Extremely Very Good Recyclers

Grades: Pre K-K

Subjects: Language Arts, Science, Social Studies

Time: 50 minutes

Objectives:

- Explain the need to reduce the amount of trash they generate, and describe ways in which they can make changes in their actions to support waste reduction
- Collect, record, and interpret data using a variety of graphic representations.

Standards:

Technology Standard 3: Understand the relationship among science, technology, society and the individual.

- Benchmark # 3: Know that man-made materials, products and systems can affect the environment adversely, yet there are things that can be done to circumvent this process (e.g., disposing of waste properly, reusing objects, recycling, reducing the amount of trash created, composting, shopping green, buying in bulk).

Language Arts Standard 8: Use listening and speaking strategies for different purposes.

- Benchmark # 1: Make contributions in class and group discussions.
- Benchmark # 2: Ask and respond to questions.
- Benchmark # 5: Use grade level appropriate vocabulary in speech (e.g., terms related to waste reduction and recycling).

Materials:

- Provided Recycling Worksheet (on PDF below)
- Provided tally and calendar sheet tally sheet up to 100 and two week calendar (on PDF below)
- Provided Recycling t-shirt template with blank lines at bottom (on PDF below)
- A copy of “Charlie and Lola, We are Extremely Very Good Recyclers” by Lauren Child and Bridget Hurst

Overview: The average US citizen generates approximately one ton of trash annually, but seldom gives it any thought once they throw it away. So what happens to it all? Well, it goes into the waste stream where it is collected and hopefully, disposed of in a manner that least impacts the environment. This process is known as solid waste management.

The Environmental Protection Agency has designed a plan for this process, which they refer to as “integrated solid waste management”, and has identified five ways to properly handle waste materials: a) source reduction and reusing, b) recycling, c) composting, d) converting to energy, and e) burying it in a sanitary, engineered site. The EPA emphasizes that there is no definitive approach to waste management and encourages communities to combine these five methods to effectively address the issue.

Most recyclable materials are sent to a single stream materials recovery facility. (The term “single stream” refers to the fact that the recyclables are not pre-sorted by the consumer.) Trucks transport the recyclables to the facility, where they are unloaded onto the “tipping floor”. From there they are placed on a conveyor belt and sorted by hand and by machine into the four main recycling categories: a) plastics, b) paper, c) metals, and d) glass. Once sorted plastics are further sorted by color and type. Some facilities use air to separate lighter plastics from heavier ones, while others use optical scanners, or both methods, to separate by type (e.g., PET, HSPE, etc). After sorting, the plastics are baled and sent off to manufacturing plants where they are ground up, washed, melted, and reformed into plastic pellets. These plastic pellets are what is used to make other consumer goods.



Paper recyclables are sorted into four categories: a) corrugated boxes, b) newspaper, c) mixed paper, and d) office mix. These are each baled and sent off to paper mills. Used newsprint, for example, is washed and rinsed and simultaneously has the long and short fibers separated from it. The long fibers are then mixed with wood scraps from lumber mills and together combine to make up pulp. The pulp is then poured onto large rollers, drained, and run through heated rollers. The paper that results is trimmed, rolled onto tubes and sent to printing plants.

Glass recyclables are sorted by color. This may take place before or after crushing the glass, depending on the facility, and sometimes it is shipped without sorting. Once glass is crushed it is cleaned of any debris and contaminants. Then the crushed glass, or “cullet”, is loaded onto trucks and transported to manufacturers. Crushed glass is used for a variety of purposes, including the production of new containers, kitchen countertops, and in the construction of roadways. To make new glass containers the recycled, crushed glass is mixed with sand, soda ash, limestone and feldspar. This mixture is then melted down in large furnaces and reformed into new containers. Recycling one ton of glass saves 1330 pounds of sand, 433 pounds of both soda ash and limestone, and 151 pounds of feldspar that would otherwise be used to produce new glass.

Magnets are used to separate steel from other recyclables, and aluminum is separated mechanically using an eddy current. Once separated the steel and aluminum are crushed, baled and sent to processing mills. Aluminum is melted down, and either poured into molds or rolled into sheets, to await use by manufacturers to make new products. Tin and steel require the process of electrolysis to be recovered. Following the recovery they are purified, melted and poured into molds. When it is time to make them into new products, the steel is melted down, poured onto sheets and then coated by the tin before forming. Once these and the other recyclables mentioned above have been processed and transformed into useful items, they are placed back on the shelves for consumers to purchase, and the cycle starts once again.

Kid’s Speak: Recycling is the process of reprocessing materials into new items. For example, a plastic bottle can be recycled and emerge as a fleece jacket. If trash is not recycled, it is taken to landfills which are rapidly filling. Eventually more land will be needed for landfills so that land will be unavailable for environmentally friendly use by people, plants, or animals. Items made from glass, paper, aluminum, and plastics can be recycled. Recycling prevents valuable resources from being wasted. These items are sorted and separated into material types. If you are unsure if an item or its packaging material can be recycled, check for the recycling symbol.

Recycling usually occurs in one of these ways. For household recycling often curbside collection is available. Typically presorted recyclable materials left by residents in front of their homes in boxes, bags, or bins are collected by a recycling vehicle. Another alternative if for residents to take recyclable items to a recycling collection facility. Schools districts may have contracts with companies to haul away trash and recyclables.

Eco-Fact: According to USA Today, the average American creates 3.5 pounds of trash each day.

Procedure:

Before Conducting the Lesson:

- Teacher introduces the lesson by wondering aloud, “Why should I recycle?” The teacher answers her own question with a few ideas on why people should recycle and stops suddenly. The teacher realizes that she has the perfect book to help her answer her question. The teacher introduces the book “Charlie and Lola, We are Extremely Very Good Recyclers” by Lauren Child and Bridget Hurst.
- Teacher introduces and reads the story aloud to the class.

Learning to Recycle:



- Following the reading the teacher poses several questions to students.
 - What did Charlie teach Lola about recycling?
 - How did Lola and her friends earn a school tree?
 - What type of items can we recycle?
 - What type of items can't we reuse or recycle at school? Why?
 - Discuss the importance of the recycling.
- Create a list of ways our class can practice the recycling on a daily basis in school. Generate a list of guidelines (using either words pictures, or both) and post prominently near trash and recycle bins.
- Can we recycle 100 items in two weeks as a team like Lola and her friends did? (This book includes recycling tips as well as a tree poster just like Lola's, so kids can keep track of their recycling projects). If poster is not available, teacher can use provided tally and calendar sheet to record 100 items. Place tally sheet by recycle bin and instruct children how to use it. As a child recycles an item, he can mark the tally sheet with a line.
- Use the provided calendar to track how long it takes the class to recycle 100 items. Mark each day of recycling. Explain that two weeks is fourteen days. Show students on calendar. Draw a tree on the last day of the two week period and explain that our goal is to recycle 100 items before the day with the tree on the calendar.
- When 100 items have been recycled and recorded on tally sheet, call class together. Congratulate students on their accomplishments. Have the class reflect on the task of recycling 100 items in two weeks.
 - Was it difficult to remember to recycle?
 - How many days did it take the class to recycle 100 items?
 - Are we finished recycling now or is it a good habit to continue?
 - If we did not recycle those 100 items what would have happened to them?
 - How do you feel about accomplishing our task?

After Conducting the Lesson:

- Guide students through this activity on the worksheet provided below. Students will draw a line from each item that can be recycled to the recycle bin. Put an "X" on items that cannot go in the recycle bin. Draw a picture in the white box of one more thing you can put in the recycle bin.
- Students will design a recycling t-shirt on the provided template worksheet to bring home and explain about recycling to their family. On blank lines at bottom of provided worksheet students can write words or a sentence such as: We are recycling 100 items.

Adaptations:

- Practice counting to 100 during the recycling task.
- Students can create posters promoting the recycling at school. Students can hang their posters throughout the school.

Extensions:

- Students can take a field trip to a recycling center to learn more about recycling.