

Lesson 3: Make a MRF: Build Your Own Recycling Factory

Grade Level:
Grades 4-8

Concepts Taught:
Recycling, Sorting/Grouping Objects

Activity Time(s):
20 minutes (lesson)
10 minutes (follow-up)

Essential Questions:

- Where does our recycling go once it leaves our house or school?
- What is a MRF and how does it work?

N.C. CORE/Essential Standards:
Grade 4: ELA Objectives Speaking & Listening 1,2,4; Science 4.P.1.1, 4.L.1.3;
Grade 5: ELA Objective Speaking & Listening 1,3,4,5
Grade 6: ELA Speaking & Listening 1,3,4; Soc Studies 6.G.1.2, 6.E.1, 6.E.1.2
Grade 7: Speaking & Listening 1,3,4; Soc Studies 7.G.1
Grade 8: Speaking/Listening 1,2,4; Soc Studies 8.G.1.1

Materials:
"Clean trash" items including mixed paper, steel cans, aluminum cans, plastic bottles of different colors
Recycling bin
"Tools" to sort recyclables (Ex: small fan, plastic garden tools, sticky paper lint rollers, magnets, flashlight, snorkel, shallow pan of water, clothespins, etc.)

Objectives:

- Students will simulate a recycling factory by devising and demonstrating methods to sort recyclable materials.
- Students will compare the simulation to how a real MRF operates.

Procedure:

1. Divide students into groups, each with their own bin of mixed recyclables to sort. Each group of students will be their own "factory."
2. Each student should choose (or be assigned) one type of recyclable to sort. For example, student 1 will only pick out aluminum cans. Student 2 will only pick out paper.
3. Students are not allowed to simply use their hands to remove items. They **MUST** use one of the "tools" provided, such as using the magnet to remove steel cans, the lint roller to pick up paper, and so on. They may not necessarily use all the tools provided.
4. Allow students 10 minutes to make and test their factory plan.
5. Have each group demonstrate their factory to the rest of the group.
6. Show students how a real MRF might operate:
 - a. **A magnet picks out steel cans**
 - b. **A light shines through the plastic bottle, can detect their color, and signals a fan to blow the green plastics into one pile, clear plastics into another, etc.**
 - c. **A sticky conveyor belt (lint roller) removes the paper Aluminum cans are left. (These are usually removed with an eddy current-a machine that produces a counter-current of electricity to repel cans out.)**

Independent Follow Up: Have students create their own invention or factory that will make something useful. Students should draw pictures of their invention and label and describe what it does in a few sentences.

