



REDUCE, REUSE, RECYCLE: WHICH IS BEST?

Description:

Students define what it means to reduce, reuse, and recycle. Then they debate which is most important.

Objective:

- Students will begin to understand the waste management hierarchy.
- Students will define what it means to reduce, reuse, and recycle materials.
- Students will develop opinions and express them as persuasive arguments.
- Students will consider alternatives to their own opinions.

Standards:

This activity is recommended for grades 3-6

All Grade Levels

- SS X.3.3 Describe relationships between humans and the physical environment.
- LA X.3.1 Speaking: Students will develop, apply and refine speaking skills and strategies to communicate key ideas in a variety of situations.
- LA X.3.2 Listening: Students will develop and demonstrate active listening skills across a variety of situations.
- LA X.3.3 Reciprocal Communication: Students will develop, apply, and adapt reciprocal communication skills.

4th Grade

- SS 4.2.1 Describe how scarcity requires the consumer and producer to make choices and identify costs associated with them.

5th Grade

- SC.5.13.4.C Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.





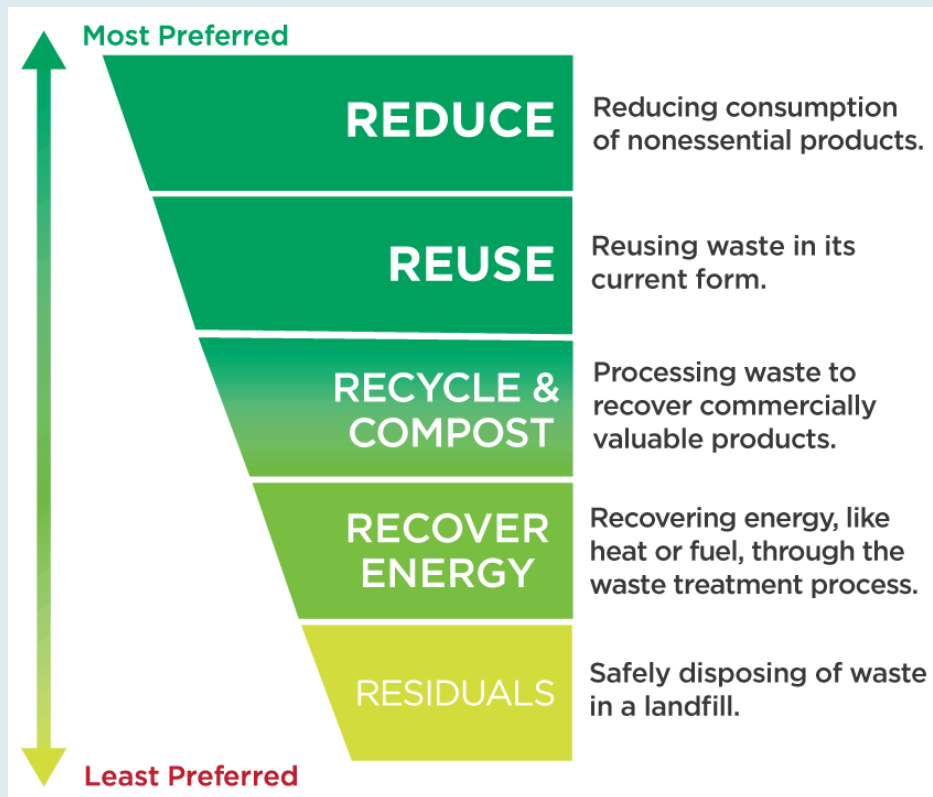
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Materials:

- 3 Signs: REDUCE, REUSE, RECYCLE
- Dry erase markers
- Large post-it paper or space to write student ideas
- Markers
- Student handout pages

Background Info:

"Reduce, Reuse, Recycle" is actually just one piece of a bigger puzzle. The waste management hierarchy is a term used to guide waste management from the most preferred to the least preferred. Although the term "waste management hierarchy" sounds complicated, it simply indicates an order of preference for action to reduce and manage waste from most favorable to least favorable actions and is designed to help guide decision making.





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Background Info Cont:

The most important step - **waste reduction** - requires advance planning and preparation. For example if we plan to reduce unnecessary paper towel usage by students, we need to explain that they should use just one paper towel to dry their hands after washing them. Or better yet, we need to prepare by installing a hand dryer, eliminating the need for paper towels at all. Waste reduction requires us to consider how we can eliminate or avoid waste altogether.

Reuse is a way of reducing waste by using an item many times in its current form without recycling it, such as refilling a plastic water bottle multiple times. Included in **reuse** is the concept of **upcycling**, or redesigning an object to have a new purpose as a DIY project. For example, redesigning a used wooden pallet to become a bookshelf or using an empty glass jar (painted and decorated) as a pencil holder.

Recycling is a process that includes collecting used, reused, or unused items that would otherwise be considered waste; sorting and processing the recyclable products into raw materials; and remanufacturing the recycled materials into new products. Consumers provide the last link in recycling by purchasing products made from recycled content. Recycling also can include composting of food scraps, yard trimmings, and other organic materials.

In Omaha, residents can recycle paper products, aluminum and steel cans, and plastic jugs and bottles in the curbside waste cart system. During 6 weeks in the spring and 6 weeks in the fall, residents can bag yard waste separately and place it curbside next to waste carts. From there the bags of yardwaste will be taken to the Oma-Gro facility where it will be composted. In Omaha it is possible to recycle glass at drop off locations and to recycle many other items at specialty recycling locations (plastic bags can be returned to recycling stations at grocery stores, packing styrofoam can be recycled at Plastilite Corp). For a list of specialty recycling options in Omaha, check out Keep Omaha Beautiful's *Recycling and Reuse Guide* at <https://www.keepomahabeautiful.org/resources/recycling-reuse-guide.html>.

Energy recovery is the conversion of non-recyclable waste materials into useable heat, electricity, or fuel through a variety of processes, including combustion, gasification, pyrolysis, anaerobic digestion, and landfill gas (LFG) recovery. Converting non-recyclable waste materials into electricity and heat generates a renewable energy source and reduces carbon emissions by offsetting the need for energy from fossil sources and reduces methane generation from landfills. After energy is recovered, approximately ten percent of the volume remains as ash, which is generally sent to a landfill. Omaha residents can participate in an energy recovery program by placing non-recyclable, soft/flexible plastics in bright orange Hefty® EnergyBags®. Once the orange bags are full of material and tied shut, residents can place the bags in their curbside green-lid recycling carts or take the bags to one of the City's recycling drop-off sites. Examples of non-recyclable plastics that are accepted by the Hefty® EnergyBag® program include candy wrappers, potato chip bags, toothpaste tubes, and shredded cheese bags.





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Safe **disposal** of waste is the final option. Residents in Omaha who place their waste in black-topped curbside carts are sending their waste to the landfill. Landfills are the most common form of waste disposal. However, some materials, such as used motor oil or lawn chemicals, should not be disposed of in landfills. In Omaha, residents can safely dispose of Household Hazardous Waste (HHW) at UnderTheSink, a special waste facility that has trained technicians on-site to collect HHW for appropriate disposal and recycling. UnderTheSink accepts HHW at no cost from Douglas & Sarpy County residents.

Activity:

1. Distribute student handout pages.
2. As a class, define the three terms: Reduce, Reuse, Recycle. Make sure everyone understands the definition, but do not have a lengthy discussion about them at this point. Have students write the definitions on their student pages. Use the large post it paper and markers to write the definitions in large print and put them on the wall near the signs.
3. Place the 3 signs that say Reduce, Reuse, and Recycle on three separate walls around the room.
4. Ask students to consider which they think is most important. They should go stand near the sign they think is most important.
5. Each group of students at a sign should work together to further articulate their reasons why *this* is the most important "R." Each student should write 3 reasons why this is the most important "R" on their student page.
6. Select one student from each group to list their reasons why their "R" is the most important. Explain to students that their job is to try to convince other students to join them so they need to be convincing in their opinions.
7. Students should listen carefully to each group and write *their* reasons on their student page.
8. After listening carefully to each group, students should carefully consider the ideas. Do they want to move to another group? Explain to students that it is not a bad thing to change their mind - they should go to the "R" they think is the most important.
9. If any students move to a different group, ask them to explain their thoughts - why did they move?
10. Inform students that ALL of these "Rs" are very important, but when we consider which is *most* important, usually we consider the order in which we say them: reduce, reuse, recycle. We say them in that order because that is their order of importance. Using the arguments the students presented, explain why they are in this order.
Make sure students understand that all their arguments have merit and that part of this process is to understand the benefits and challenges with each of these issues.





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Activity Cont:

11. Ask students to return to their desks. As a class, answer the rest of the questions on the student handout page.
 - According to the Environmental Protection Agency, and most sustainability experts, which is the most important R? Why?
 - Reduce - if we reduce our waste, we don't have to figure out how to reuse it or spend the energy to recycle it
 - Explain that there are some "Rs" that are not on our 3 R list, but are very important. Ask students if they have any guesses what those might be? Ask them to consider what else we do with our waste. What is the full list, in order? Reduce, reuse, recycle and compost, energy recovery, trash/landfill.
 - Note: you may need to explain and/or define some of these terms with your students. Although this is known as the waste management hierarchy, it is not suggested that you use that term with students - it can be confusing. Instead, encourage students to understand what each step is and why they are important rather than focusing on the specific term. Ultimately the goal is to make as little waste as we can, and find the most effective ways to utilize the waste we do create.
 - Why is this important? There are TONS of possible answers to this. Some suggestions are:
 - More waste means more pollution, which is bad for the environment and for us.
 - Eventually our landfills will get full, and where will we put the waste then?
 - We are using non-renewable resources (like plastic) at a very fast rate and eventually we will run out of ability to make them.
 - If we reuse something, we don't have to spend the energy to recycle it; if we recycle it, we don't have to put it in the landfill
 - We need to consider/think about the consequences of our actions - including what it means to have so many things we use just once or twice and then throw away.

Assessment:

- Student presentations
- Classroom discussion
- Completed student handout pages





STUDENT PAGE - WHICH IS BEST?

Name:

Define: REDUCE

Define: REUSE

Define: RECYCLE





STUDENT PAGE - WHICH IS BEST?

Which do you think is most important "R?"

Blank white space for student response.

List 3 reasons why this is the most important "R."

Large blank white space for student response.

What reasons did other groups have for their R being the most important?

Two large blank white boxes for student response.





STUDENT PAGE - WHICH IS BEST?

Do you want to change your mind? Which R do you think is the most important now? Why?

According to the Environmental Protection Agency, and most sustainability experts, which is the most important R? Why?

What is the full list, in order?

1. _____
2. _____
3. _____ and _____
4. _____
5. _____

Why is this important?

