



The Three Rs

Grade: 1

Subject Areas:

Life Science, Physical Science,
Art, Social Studies

Skills: sorting,
modeling, motor skills,
observing

Duration: 2-3 hours

Connections:
natural resources,
environment, economics,
health

Vocabulary

garbage

waste

natural resources

renewable

non-renewable

conserving

reusing

educing

recycling

landfill

Objective:

Students will be introduced to ways to help the environment by learning about the “three R’s”: reduce, reuse, recycle.

Materials

- the book: “Be a Friend to a Tree” by Patricia Lauber
- an assortment of products
- 3 cardboard boxes
- large picture/word vocabulary cards
- simple microscopes and slides or magnifying glasses (optional)
- easy things to view through a microscope
- assorted paper products
- several blenders or egg beaters
- several large bowls
- several spatulas for removing the paper
- warm water and several cups
- newspapers or paper towels
- paper cups to press against
- plastic tubs for slurry

Standards

Strands: Excellence in Environmental Education Guidelines

Strand 1 — Questioning and Analysis: E) Organizing information:

Learners are able to describe data and organize information to search for relationships and patterns concerning the environment and environmental topics.

Strand 2.3 Humans and Their Society: A) Individuals and groups: Learners understand that people acts as individuals and as group members and that groups can influence individual actions **D) Global Connections:** Learners understand how people are connected at many levels-including the global level- by actions and common responsibilities that concern the environment.

Strand 2.4 Environment and Society: C) Resources: Learners understand the basic concepts of resource and resource distribution.

Strand 3.2 Decision-Making and Citizenship Skills: A) Forming and evaluating personal views: Learners are able to examine and express their own views on environmental issues.

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California State Educational Standards:

Investigation and Experimentation: 4b: Students will record observations and data with pictures, numbers or written statements.

I and E 4d: Students will compare and sort common objects by one physical attribute (e.g., color, shape, texture, size, weight).

Background

Origin of our Stuff

Garbage, Garbage, Garbage! Where does all of our garbage come from? **Garbage** is the left over stuff that people don't want or need any more. If you look at a big pile of garbage you may see all sorts of things in it from broken toys to bits and pieces of glass to someone's leftover lunch. You may see different materials like plastic, glass, tin, rubber, wire, and wood thrown into a garbage can, but that doesn't mean these materials belongs there. Many people throw away stuff that could be recycled and/or re-used.

Garbage is a form of waste. **Waste** is anything that is discarded, rejected, surplus, abandoned or otherwise released into the environment that could have a negative effect on the environment.

All the different materials people make and use can be traced back to nature. Materials that come from nature are called natural resources. **Natural resources** come from living and non-living things. For instance, paper mostly comes from trees and glass mostly comes from sand. People use trees to make lumber to build houses and other structures. Trees are also used to make pulp which is converted into paper products. Sand is usually made of small bits of rock especially a mineral called quartz. Rocks and minerals are non-living things. When quartz is heated up to super hot temperatures it can be turned into glass. Glass is used for many things including storing food and drink and making windows.

The most commonly used natural resources can be classified into eight different categories. These categories are: sunlight, air, soil, plants, animals, water, minerals, and fossil fuels. Some resources can be replaced, and therefore, can be used over and over again and are called **renewable resources**. Renewable resources include things that come from plants and animals like wood and wool. Other resources are here on a one time basis. When these resources are used up, they will not be replaced. Resources that cannot be replaced are called non-renewable resources. **Non-renewable** resources include oil, gas

and minerals. Many of our natural resources are being harmed and used up too quickly which damages our environment. It is important that people learn how to manage natural resources wisely.

Make it Last

In order to make resources last, people need to come up with ways to conserve them. To **conserve**, or keep from loss, means to reduce wastefulness and destructive uses of things. People can conserve resources by practicing the 3

Local Connection

Arcata Community Recycling Center

The Arcata Community Recycling Center (ACRC) offers a series of free and engaging lessons to schools in Humboldt County. These lessons are age appropriate, hands on and stress the importance of waste reduction, conserving natural resources and composting. The educational component of ACRC is partially funded through local government in order to reach unincorporated areas including schools located in southern Humboldt.

In addition to in-class programs, ACRC gets students involved several other ways. Service learning projects are available such as cleaning up local beaches and deciding which objects should go in a landfill and which items should go to the recycling center. The Bette Dobkin Recycling Education Center, an interactive interpretive center focused on waste reduction, is set up to welcome visiting classrooms as well. Located at the processing facility in Samoa, this center provides a great behind-the-scenes view of recycling. Students see the life cycle of their recyclables through a feature film and then don safety gear to follow the path of materials through the facility. A field trip here would expose students to giant piles of recycled material which can emphasize the collective efforts of recycling in our community.

For more information go to: www.arcatarecycling.org/AboutACRC/EducationProgram.pdf or call: (707) 445-4321

R's of waste management: reducing, reusing, and recycling. When people practice the 3 R's, it not only saves money and resources, it helps protect our environment. (Note: sometimes 4Rs are used the 4th being restore).

Reducing is to make something smaller or to use less of it, resulting in a smaller amount of waste. Sometimes a person can reduce things at the source. This means buying or taking less. A good practice to get in to is to buy only what you need and to use everything that you buy. Another good way to reduce waste is to not buy things with a lot of wasteful packaging.

Reusing is the practice of using things over and over again. Many people reuse cloth shopping bags and ceramic coffee mugs instead of buying plastic or paper ones. Another way to reuse things is to hand them down to someone else. For instance, if someone grows out of their clothes, a smaller person may be able to wear them. Often one person's trash is another person's treasure. Lastly, if something is broken, like a bicycle, it is often possible to fix it instead of throwing it away.

Many products can be recycled like paper, aluminum, glass and plastic. **Recycling** occurs where someone takes a product to a place when it can be made into the same product or into a new product instead of throwing it away. Many containers that can be recycled have a recycling symbol on them. The recycling symbol is usually a recycling loop made of three arrows symbolizing the three steps to recycling. The first step is the collection of recycled materials. Some towns and cities offer curbside recycling programs. Here all people need to do, is put their recyclable materials on the curb, and they will be picked up. In rural places, like southern Humboldt, people have to take the time and energy to drive recyclable materials to a recycling

center. The second step in recycling includes the physical change that occurs when something new is made from something recycled. This includes a manufacturing process that only occurs at specific sites. For instance, certain manufacturing plants take old aluminum cans and clean them. Next, the cans are melted down and molded into ingots, which are then pressed into aluminum sheets. The aluminum sheets are formed into new aluminum cans. The third and last step is obtaining a product made from something previously recycled. For instance, many paper products can come from previously recycled paper. Often products made of recycled materials will have the recycling loop symbol on them. Buying products made of recycled materials by looking for the loop symbol is a great way to conserve resources.

More things will get recycled if there is a demand for them in the market place. Out of all of the materials that can be recycled paper is probably the easiest. Unfortunately, 1/3 of all trash found in landfills is made of paper even though there is a relatively high demand for recycled paper products. Many recycled paper products are available like office paper, paper towels, tissues and toilet paper. By recycling paper and buying recycled paper products, many forests are saved. As a matter of fact, if one person recycled their newspaper every day for a year, 4 trees would be saved, as well as 15 lbs. of air pollutants, 2,200 gallons of water, and enough energy to power a 100 watt light bulb for 152 days. This savings is substantial, especially if a lot of people recycled their newspaper every day.

Garbage typically goes into a **landfill**. Landfills have to be engineered so they won't release toxins into our water, air, and soil. Toxins are products that are harmful to people and wildlife. Landfills are toxic because, many of the items people throw away are toxic like paint and household

cleaners. Many toxic substances can be recycled if taken to a recycling center. Sometimes people take things to the landfill that can be composted. Composting is a way to turn food and yard waste back into soil so that it can be used to grow more food.

Many people don't think about where their garbage goes. The old saying "out of sight, out of mind" applies here. However, garbage is important to think about. When somebody throws something away, it goes into our environment. If people aren't careful about what they throw away, they can pollute the environment. The more people practice the 3 R's (reducing, reusing, and recycling), the cleaner and healthier our environment will be .

Activity 1: Where Do Things Come From and Where Do They Go?

Preparation

Gather several different products from home before coming to the classroom. These products will be used to discuss resources and will be sorted into the different labeled boxes. Label the boxes ahead of time. Products that come from oil can be placed in the box labeled “plants”. For “affect” you may want to pull materials from a garbage can.

Procedure

1. Gather the students around and explain to them that they are going to learn about where things come from and where they go. Have the labeled boxes in a visible spot in the classroom. Read the class a story about the importance of conserving resources. Next, show the students a bunch of different products. Point out as you go any recycling symbols on products. Before sorting, first make sure the students know what the labels say on each box. Hold each box up and say the words together. Remind them that these represent different natural resources. Have a few student volunteers sort various materials you pull out from your pile into the correct box (animal, vegetable, mineral). Throughout the sorting exercise, ask the students questions about where things come from. Everything people use or buy comes from natural resources.

2. Next begin discussing where things go once we no longer need or want them. From the boxes hold up an item as you ask questions. Have the vocabulary words standing by. As these words are discussed, place them on a felt board or chalk board so they are visible.

3. Next, sing a song about the 3Rs or recycling (need to find one). or say the poem together (see pg. 6)

4. Now it is time to break into two groups. One group will proceed to Activity 2, while the other group looks at materials through the microscopes. Have microscope stations set up. Have objects already focused in each microscope’s field and place

Materials

- the book: “Be a Friend to a Tree” by Patricia Lauber or an alternative book about recycling. (ask teachers)
- an assortment of products made from different materials (cotton, tin, plastic, wood, glass, paper, food, cork, etc.) An option is to have a garbage can full of “clean” garbage to pick through. (caution: wear gloves)
- 3 cardboard boxes labeled: animals, plants, and minerals used for sorting
- large picture/word vocabulary cards
- simple microscopes and slides or magnifying glasses (optional)
- easy things to view through a microscope like feathers, cloth, plastic, wood, and paper (optional)

them at a height where students can easily see through the lens. While the students are viewing materials you may also want to have them find words to describe the color and texture of each item.

- *Where does paper come from? (hold up a piece of paper) Have a student take it to the correct bin.*
- *Where does plastic come from? (hold up a plastic bottle) Have a student take it to the correct bin.*
- *Where does cloth come from? (hold up a towel or shirt) Have a student take it to the correct bin.*
- *Continue holding up items, asking where they come from and sorting them by resource type.*
- *Where does our trash go?*
- *Can trash harm our environment?*
- *Does everything in a trash can belong there? (Pull out an item from one of the boxes)*
- *Besides the trash, where can this item go? Can it be recycled? Can it be re-used? Is it renewable?*
- *What does renewable mean?*
- *What types of things can be recycled?*
- *Why is reducing trash important?*
- *What are the three R’s (say them together)?*



Activity 2: Making Paper

Preparation:

This activity can be messy. Setting up large tables outside may work well. Read the directions thoroughly before beginning (see attached). Rachel instructions need to be simplified and altered. A few student can be at each station. At one station students tear paper; at another students can add water and stir, etc. Have several tubs from which students can take out slurry from the tubs with their hands and press it into a paper cup to make a cup planter. Note: more than one adult is necessary for this activity. This is a great time to ask for parent volunteers.

Procedure:

1. Follow the directions for making paper. (attached) . It is best to leave it overnight. Once their planter is dry they can follow up by planting seeds in it. Communicate with the classroom teacher about this follow through activity beforehand. (I have never made paper—check on procedure)
2. After the first group finishes making paper, switch groups. After both groups have performed both activities 1 and 2 have the students go to recess. During recess clean up the “Making Paper” mess.
3. When recess is done, gather the students around again and reinforce some of the concepts learned. Depending on how much

Materials

- assorted paper products (newspaper, stationery, drawing paper, Kleenex, toilet tissue etc.)
- several blenders or whisks
- several large bowls
- several spatulas for removing the paper
- warm water and several cups
- newspapers or paper towels (folded)
- paper cups to press against
- plastic tubs for slurry

time is remaining, read the poem:
I can Make a Difference or show
them a video about recycling.



Extensions

- Take a field trip to the Bette Dobkin Recycling Education Center located in Samoa.
- Dedicate a few days to cleaning up a nearby park or playground.
- Have the students color in a coloring book about recycling. Many free ones are available online.
- Have the students make a booklet that includes things made from trees.
- Have the students observe decomposition by putting garbage in a bottle full of dirt and then observing it over several weeks time.
- Make art projects from re-useable items.
- Begin a recycling campaign from home as a math lesson. Have students sort, count and weigh the containers brought from home. The money gained can be put towards the classroom.

References

- Cal Recycle, <http://www.calrecycle.ca.gov/RecycleRex/EarthSavers/default.htm>, 2011
- Kindergarten Science Docent #5, Maudi Elementary School, <http://www.meptc.org/forsciencedocents/SDK%205%20Recycle.pdf>, 2011
- Making Paper by Hand: http://www.tappi.org/paperu/art_class/makingPaper.htm, 2011
- Recycling for Kids, <http://www.benefits-of-recycling.com/recyclingforkids.html>, 2011
- Recycling Rates are Kicking our Cans, <http://www.grinningplanet.com/2004/10-05/recycler-recycling-article.htm>, 2011
- Recycle Works, County of San Mateo, <http://www.recycleworks.org/kids/recycling.html>, 2011
- Reduce, Reuse, Recycle, NIEHS Kids' Page, <http://kids.niehs.nih.gov/recycle.htm>, 2011
- Stempleski, Susan, Ch 9: Reusing and Recycling, Language and Civil Society, <http://eca.state.gov/forum/journal/env9background.htm>, 2011
- What are Natural Resources, K-3 module, Closing the Loop, California Integrated Waste Management Board, www.ciwmb.ca.gov

Additional Resources

Here is a list of things you should always recycle (or reuse!)

Acid Batteries	Paint
Aluminum Cans	Paper
Building Materials	Plastic Bags
Cardboard	Plastic Bottles
Chemicals	Steel Cans
Electronic equipment	Tires
Glass (particularly bottles and jars)	White Goods (Appliances)
Ink cartridges	Wood
Lead	Writing/Copy Paper
Magazines	Yard Waste
Metal	
Newspaper	
Oil	

<http://kids.niehs.nih.gov/recycle.htm>

Captain Conservation: All About Recycling (educational kit)

32 cartoon booklets, audio cassette, teacher's folder with handouts

Crunch, Smash, Trash! (video)

30 min., for ages 2-10+, shows large "monster machines" collecting and compacting recyclable products, classical soundtrack emphasizes this exciting footage of the recycling process!

Destination Education-Earth: We're in it Together (educational kit)

"Auntie Litter" videos (4 videos- 15 min. each with segment guide), audio cassette, Endangered Species video and guide, Kids Care activity book, President's Environmental Youth Awards program, EPA educator's resource packet, Department of Natural Resources educator's resource packet.

Garbage Day (video)

30 min., pre-K to 3+, a father and son join their garbage man "Gus" on his route. Invigorating music keeps little ones alert and interested.

Recycling Is Fun! (video)

12 min., K-4th grades, three kids investigate the 3-R's by visiting a landfill, recycling center, and a supermarket.

Recycling: The Endless Circle (video)

(National Geographic), 20 min., appropriate for older elementary ages to adults, shows how the 3-R's can keep our waste crisis under control.

The Berenstain Bears: Time to Clean Up, Pick Up, and Recycle (educational CD ROM)

A terrific CD ROM that includes games (with adjustable levels to suit ages 5 to 8 years), short stories about recycling and environmental issues, and poster making activities (color printers work the best).

Yes I Can! (video)

15 min., For ages 6-10 but for older children as well. A multi-material recycling video sponsored by the Steel Recycling Institute. The recyclables sing and talk! A great video for kids.

Additional Resources available at: <http://www.tricountyresource.org/education/recycling.html>

I Can Make A Difference

The Earth is my home,
and it is special to me.
I want to protect it
and care for its needs.

The Earth sure could use
my two helping hands
To safeguard the water,
the air, and the land.

By putting my trash
where it should be,
I'll keep the Earth pretty
for others to see.

By keeping pollution
out of the water,
I can save animals
like the Sea Otter.

By collecting newspapers,
bottles, and cans,
I can recycle
instead of filling the land.

Conserving water
is another good deed.
I'll carefully use
just the water I need.

To show the Earth
how much I care,
I can plant a tree
where the land is bare.

By walking and car-pooling
when I move about,
I will save energy,
which also helps out.

By trying each day
to show that I care,
I will clean up the land,
the water and air.

With helping hands
and good common sense,
I truly can make
a great difference!