TACKLE TRASH

GRADES 5-8

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TIME ALLOTMENT:

Introductory Activity: 15 minutes
Learning Activity: 60 minutes
Culminating Activity: 30-60 minutes

OVERVIEW:

Every year in the United States, Americans generate tons of trash comprised of paper, cardboard, cans, furniture, appliances, plastic, phone books, glass, food waste, yard clippings, used batteries, and much, much more. On the average, each American produces about 6 pounds of trash each day. If this average was used to estimate the total of trash every person living on earth generates each day, the amount would be 6 billion people x 6 pounds, or about 36 billion pounds of trash each day. As the population increases, so does the trash. Unfortunately, places to dispose of this trash do not increase along with the increased trash amounts. It, therefore, becomes imperative for us to find new ways to handle our trash other than disposing of it in landfills.

In this lesson, students consider the types of materials that are often thrown away that could be recycled instead, thereby reducing the need for landfills and preserving our natural resources.

SUBJECT MATTER: Environmental Science

LEARNING OBJECTIVES:

Students will be able to:

- Identify objects that can be recycled.
- Identify objects that are made from recycled materials.
- Explain the proper ways to recycle glass, aluminum, paper, plastics, food, and other objects.
- Identify the amount of recycled material that is in products bought at the store.
- Estimate the amount of trash that can be reduced if each person recycles the recyclable trash that is currently thrown into landfills.

STANDARDS:

National Science Education Standards
http://bob.nap.edu/html/nses/html
Content Standard C: Life Science
Structure and function in living systems/ Populations and ecosystems

Louisiana Science Frameworks:
State Standards for Curriculum Development
http:www.doe.state.la.us/doe/assessment/standards/SCIENCE.pdf

SE-E-A3: Identifying ways in which humans have altered their environment, both in positive and negative ways, either for themselves or for other living things;

SE-M-A3: Defining the concept of pollutant and describing the effects of various pollutants on ecosystems;

SE-M-A4: Understanding that human actions can create risks and consequences in the environment;

SE-E-A6: Distinguishing between renewable and nonrenewable resources and understanding that nonrenewable natural resources are not replenished through the natural cycles and thus are strictly limited in quantity.

LPB
STATE FARM INSURANCE State Farm Companies FOUNDATION
cpb Corporation for Public Broadcasting
thirteen WNET NEW YORK
NTTI
GE Fund
CISCO SYSTEMS FOUNDATION

MEDIA COMPONENT:

Video:
Enviro-Tacklebox™—*Tackle Trash*
An LPB Production in which students examine environmental issues brought about by the growing amounts of waste that our society generates. Students look closely at their personal buying habits and explore the benefits and decisions associated with societal waste.

Web sites:

Enviro-Tacklebox™ http://www.envirotacklebox.org This is Louisiana Public Broadcasting's Web site providing teaching information, films, articles and student activities involving environmental science.

Commonly Recycled Materials: http://www.obviously.com/recycle/guides/common.html This site provides students with facts about materials that are commonly recycled, including natural resources and energy saved and provides information about how to recycle these materials.

World's Shortest Comprehensive Recycling Guide: http://www.obviously.com/recycle/guides/shortest.html This site provides students with facts about materials that are commonly recycled in a short, chart format. It also provides information about materials that might fall into the general category that are not good to recycle.

Recycle City: http://www.epa.gov/recyclecity/ An interactive site where students apply their new knowledge about reducing, reusing, and recycling to change Dumptown into Recycle City

Enviro-Tacklebox™: http://www.envirotacklebox.org/teacherguide/modules/m2trash.htm *Decisions Based on Science—Tackle Trash* This website provides background information about recycling, reducing, reusing, and repairing items and includes student activities to accompany the video, "Tackle Trash."

MATERIALS:

Video: Enviro-Tacklebox™—*Tackle Trash*
Per Class Discussion (One of each recyclable item listed below):

- Aluminum can
- Vegetable can
- Milk jug
- Glass bottle
- Plastic soda bottle
- Section of the newspaper
- Laundry detergent bottle

Per Group:

- 15-20 Trash items with Recycled labels, Recyclable labels, and No labels
  (Have students collect these for several days prior to the lesson in addition to the ones you collect.)

PREP FOR TEACHERS:

1. Preview the video "Tackle Trash" and **CUE** it to the segments indicated.
2. Access and review the websites to become familiar with the content.
3. Make copies of handouts for students.
4. Collect and clean one each of the following: aluminum can, vegetable can, milk jug, glass bottle, section of the newspaper, and laundry detergent bottle.
5. Set the collected objects from Step 4 on a table in front of students for introductory activity.
6. When using media, provide students with a **FOCUS FOR MEDIA INTERACTION**, a specific task to complete and/or information to identify during or after viewing of video segments, Web sites or other multimedia elements.

INTRODUCTORY ACTIVITY:

1. Show students the collected objects. Ask students, "What do all of the objects have in common?" ***(Guide students to mention that they can all be recycled.)*** Ask students what **recycle** means. ***(Guide students to say that "recycle" means to use the material in the item again in a new product or in a new way.)*** Ask students to look at each item and suggest one new product that can be made from the item or one new way the item could be used. ***(Write all suggestions on the board.)***
2. Provide students with a **Focus for Media Interaction**, telling them to watch the video clip to see what one community "recycles" and the unique way they do it. **Play** the video from the beginning until you see the back end of a car with a sign on it that says, **"Honk if you see art**," and you hear the words, "**So recycle! Recycle**!" **Stop** the video and **Fast Forward** until you see the Holy Mackerel picture and see the words, "The average American generates six pounds of garbage per day or one ton per year." **Pause** the video at the beginning of this frame.
3. Ask students to describe how the community was recycling their trash. ***(by decorating their cars with materials that were no longer being used)*** Ask students to name several objects that were used to decorate the cars. ***(beads, shoes, silk flowers and plants, etc.)*** Ask students, "What is the real purpose of the parade? ***(to get the message across to other citizens that they should recycle their trash, rather than just throw it into a landfill; to emphasize the importance of recycling)***. Ask students, "Is this way the only way that trash can be recycled?" ***(Guide students to understand that the type of recycling done in this parade was just for fun and to emphasize a point, and that there are better uses that can be made with much of the trash we throw away.)***
4. Tell students that in this lesson, they will learn how to identify items made from recycled materials, items that can be recycled, and ones that have no recyclable value. Students will also learn the benefits of recycling these materials instead of disposing them in landfills.

LEARNING ACTIVITIES:

1. **Provide students with a Focus for Media Interaction,** telling them to view the videoto learn why it is so important to recycle. **Play** the video until you see the parade of children celebrating Earth Day. **Stop** the video. Ask students, "If the **world population** is six billion people right now and each person on earth generates about 6 pounds of trash a day, how many pounds of trash would be generated in one day? ***(36 billion pounds in one day)*** One year? ***(365 x 36 billion=13,140 billion pounds)***. "Why is it so important to recycle?" (***Students should state that the amount of trash we generate is so large that soon there will be no place where it can be buried. People must find a way to recycle, reduce, or reuse the materials already produced.)***

2. **Fast Forward** until you see the large picture of the Recycle symbol. **Pause** the video so that the Recycle symbol shows on the screen. Ask students, "Have you ever seen this symbol before? Where? What does it represent?" ***(The symbol appears on products that can be recycled. It also appears on recycling containers. The symbol means that this product can be or has been recycled.)***

3. **Fast forward** the video until you see kids watching a 3-D movie at Universal Studios and hear the words," At first glance, you might not notice something important is happening behind the scenes at the Universal Studios Escape." **Provide the students with a Focus for Media Interaction,** asking them, "What are three ways that Universal Studios practices recycling?" **Play** the video until you see the EnviroTacklebox symbol. **Pause** the video. Ask students to name the ways Universal Studios recycles (recycling their 3-D glasses, using china instead of paper plates, and using recycled paper napkins).

4. Ask students, "How can you tell if a product you are buying is made from recycled materials? Accept suggestions, then **Provide students with a focus for media interaction,** telling them to watch the next video segment to see how a person can tell that recycled materials are in the new product. **Play** the video until you see Greg Grandy in a fishing boat, holding up a fishing lure, and you hear the words, "You can see the logo of the soft drink on the strip of aluminum. **Pause** the video. Ask students, "How can a person tell if a product they are using has recycled materials in it?" **(It will have the *Recycled symbol,* the words '*Made with ___% recycled materials' or say 'Made with ___% post-consumer content.'*)** Tell students they will be looking for these words/symbols on products in the next activity.

5. Tell students, "You can find recycled materials in more than just products that you buy. Some architects that renovate buildings have found ways to reuse materials from old buildings. What do you think these recycled materials are, and how do you think they can be used in new building projects?" Accept suggestions, then, **provide students with a Focus for Media Interaction,** telling them to view the next segment of the video to see how Andy Simon, an architect that renovates old buildings, uses recycled materials. **Play** the video until you hear Andy Simon saying, "I mean it's basically recycling a community," and you see a finished view of the house he was renovating. **Pause** the video. Ask students," What types of recycled items did Andy Simon use when renovating the house?" ***(old bricks, pipes from under the houses, old tubs, stoves, etc.)*** Ask students, "How does recycling these materials help reduce trash in our landfills?" ***(It keeps the materials out of the landfills in the first place.)***

6. Divide students into small groups and have them combine their collected trash items. Provide students with **Handout #1** ***(What Can I Do with This Trash?)*** Ask students to write the name of each item in the correct category and then list one or two new items that can be made from the original item. Ask students to sort items into one of three categories: **Recycled, Recyclable, and Do not Recycle** by looking for the symbols discussed earlier. Items with no symbol should be placed in the **Do Not Recycle** category for now.

7. Ask students to count the total number of items sorted. Use the formula on the page to determine the percent of total items that have already been recycled and those that are recyclable. Record these percentages on the chart.

8. Ask students to re-examine the items in the **Do Not Recycle** category. Ask, "How many of these items do you think can be recycled? How can we find out?"

9. **Provide students with a Focus for Media Interaction, telling them to access the Web sites:** http://www.obviously.com/recycle/guides/common.html and http://www.obviously.com/recycle/guides/shortest.html to help them recategorize the items in the **Do Not Recycle** category.

10. Have students add the newly categorized Recyclable items in the correct column on the chart and rework the formula to determine the percentage of the total items that are recyclable.

11. Review the answers on Handout #1 with the students. Remind students of the fact mentioned in the Holy Mackerel segment*: Each person generates about 1 ton of trash per year.* Ask students to figure out how much trash can be kept out of landfills per person per year if each person recycles the total amount of items that were recyclable in the previous activity. ***(2190 pounds x % of items that are recyclable. Remember that each person generates about 6 pounds per day x 365 days = 2190 pounds per year.***

12. **Provide students with a Focus for Media Interaction,** telling them to view the last segment of the video to see why it is important to buy recycled materials. **Play** the video until you see the *Recyclable symbol* and you hear the words, "These are called recyclable materials." **Stop** the video. Then ask students, "Why is it important to buy recycled materials? ***(The more people that buy recycled materials, the more need for them, and the more recycling that will take place. Using recycled materials completes the recycling process, thereby keeping trash out of our landfills and reducing the demand on our natural resources.)***

CULMINATING ACTIVITIES:

Provide students with a Focus for Media Interaction, by telling them they are going to visit a model city called Recycle City to learn how citizens there recycle. Give students **Handout #2: *(Recycling Tips from Recycle City)*** to use as they explore **Recycle City**.

1. Assign each group one section of Recycle City to visit. Have students access the site: http://www.epa.gov/recyclecity/. Then have students click 'Go to Recycle City.'
2. Assign each group to visit one section of the city to learn how citizens recycle certain items.
3. As they visit each building in their assigned section of the city, have students complete Handout #2, identifying some of the recycled items and what they were used for.
4. Have each group present what they learned to the rest of the class.

CROSS-CURRICULAR EXTENSIONS:

ART:

• Create a 3-D art project using trash that cannot be recycled locally **or** have students create posters illustrating how certain recycled products are used to make new products.

LANGUAGE ARTS:

• Have students write a persuasive article encouraging fellow students to recycle, using information learned during this lesson.

MATHEMATICS:

• Have students collect, then determine the percentages of recycled and recyclable trash they create for a week. Have each student create a circle graph illustrating the amounts of recycled, recyclable, and non-recyclable trash they create in a week, then compare graphs with other students.

SOCIAL STUDIES:

• Have students research how trash was handled during different time periods in the United States or in a particular country or culture. Have students share research with classmates.

COMMUNITY CONNECTIONS:

- Visit a local recycling facility to observe what is done with recyclable materials when they arrive.
- Visit a plant that uses recycled materials to make new products.
- Sponsor a recycling event at your school to collect used materials that can be recycled locally. Distribute brochures to area neighborhoods, encouraging citizens to bring their recyclables to school.
- Have students create a video that informs citizens about recycling and where to bring used materials such as computers, cell phones, computer floppy disks, eyeglasses, polystyrene packing and peanuts, compact discs, smoke detectors, single use cameras, automotive batteries, etc. that cannot be picked up by recycling trucks. Ask the local library to add it to their video lending program.

STUDENT MATERIALS:

- Student Handout #1—What Can I Do with This Trash?
- Student Handout #2—Recycling Tips from Recycle City

ADDITIONAL RESOURCES:

Condon, Judith. *Recycling Glass.* Watts, c1991. This book explains the methods of recovering glass containers for use in glass manufacturing.

Condon, Judith. *Recycling Paper.* Watts, c1991. This book explains methods for recycling paper.

Foster, Joanna. *Cartons, Cans and Orange Peels: Where Does Your Garbage Go?* Clarion Books, c1991. This book focuses on solid waste problems and reinforces the reduce-reuse-recycle methods of handling garbage.

Killen, Stuart A. *Recycle It Once is Not Enough.* Abdo and Daughters Books, c1991. This book discusses recycling as one approach to trash problems. It includes chapters on glass, paper, plastic, batteries, and aluminum.

Palmer, Judith. *Recycling Plastic.* Watts, c1991. This book explains how recycling of plastic products helps to reduce environmental problems.

Palmer, Judith. *Recycling Metal.* Watts, c1991. This book discusses the recycling of metal objects to help reduce environmental problems.

Handout #1

WHAT CAN I DO WITH THIS TRASH?

Name of Group Members:_____

_____

Date_____ Number of Items in Trash Bag:_____

Directions: Empty the trash bag of items onto a working surface. Count the total number of items and record on the worksheet. Carefully examine each item, looking for **Recycled** or **Recyclable** labels or words. Sort each item into one of the three categories in front of you. List each item in the correct category on the worksheet. Then use the formula to determine how much of each type of trash you have.

RECYCLED	RECYCLABLE	DO NOT RECYCLE	POSSIBLE NEW ITEMS
Total Items: **Total %:**	**Total:** **Total %:**	**Total:** **Total %:**	

% Recycled=_____ % Recyclable=_____ % Not Recyclable:_____

FORMULA

<u>Total Items in Category</u> = % of Trash in that Category
Total Items in Trash

Handout #2

RECYCLING TIPS FROM RECYCLE CITY

Name of Group Members: _____

_____

Date: _____ Section of Town: _____

Directions: Visit each building/business in your section of the city. Certain pictures within the building that you click on will give you information about materials that can be recycled there. Read about each material and record it on the chart. If you need additional worksheets, ask the teacher.

Building or Business Visited:_____

Material Being Recycled	New Material Being Created	Materials That Can't Be Recycled

Building or Business Visited:_____

Material Being Recycled	New Material Being Created	Materials That Can't Be Recycled