



Project Learning Tree®



GREENSCHOOLS
FOR EARLY CHILDHOOD

Waste & Recycling Investigation



Table of Contents



Introduction	1
Background for Educators	1
Waste & Recycling Investigation Terminology	3
Getting Ready	3
Introduce the Theme	4
Conduct the Waste & Recycling Investigation	5
Taking Action	15
My Action Plan Worksheet	18
Where Does Garbage Go? Worksheet	19
Garbage Goes Here Worksheet	20
Garbage Goes Here Answer Key	21

First Edition
Copyright 2016, Sustainable Forestry Initiative Inc.



Introduction

Overview

Get ready to engage young learners while investigating the waste and recycling practices at your early childhood center! The information you gather will help you develop an action plan to make improvements. Reducing waste, reusing items, recycling, and composting save natural resources, energy, and landfill space, and can save money, too!

Early Childhood Learning Objectives

- Observe ways waste is generated at the center
- Develop a basic understanding of where waste goes
- Develop a basic understanding of recycling and what can be recycled
- Develop a basic understanding of composting and what can be composted
- Start to develop an understanding of why it is important to reduce waste



Word Bank

Composting, garbage, landfill, recycle, reuse

Related PLT Education Activities

The following PLT activities can be used to supplement this Investigation.

PreK-8 Environmental Education Activity Guide

Activity #24 - Nature's Recyclers

Activity #51 - Make Your Own Paper

Background for Educators

Our fast-paced society is full of items to make our lives more convenient – from fast-food wrappers and cups to soda cans and plastic bottles. But these convenience items, as well as all the other disposable items we use, can end up in landfills. It costs money to dispose of them and creates environmental problems.

According to the U.S. EPA, Americans generated 254 million tons of waste in 2013 (4.4 pounds per person per day!). Of that amount, approximately 34 percent was recycled. The EPA encourages practices that reduce the amount of waste needing disposal, such as waste prevention, recycling, and composting. This Investigation addresses each of these practices and provides tips on how to encourage these practices at your center.

Why Study Waste and Recycling at Early Childhood Centers?

This investigation will help young learners become more aware of the things they throw away every day and ways to reduce the amount of waste they generate in the first place. They will learn that some of these items can be recycled, reused, or composted. Schools model good citizenship by recycling. In addition, children can share with their families what they've learned to make a difference at home.

Waste reduction actions can also save money. For example, St. Michael School in Livermore, CA, received a PLT GreenWorks! grant that enabled them to implement a waste reduction program. In just one year, they reduced their waste removal costs by \$1,200 and diverted approximately 40% of their waste from landfills to composting and recycling centers.

GreenSchools Recycling Success

With just 380 children in grades Pre-K through 4, Lipscomb Academy Elementary School in Nashville, TN, is small, but this PLT GreenSchool is a big recycler. The school established a school- and community-wide recycling program that has kept a huge volume of garbage out of Tennessee's landfills. In 2014, they collected and recycled more than 44,000 plastic bottles and aluminum cans, 32,500 milk cartons, 7,250 juice pouches, thousands of plastic bags, and several tons of paper and cardboard that would otherwise have ended up in a landfill.





Composting

Composting is a perfect fit for early childhood centers because it allows children to see the process by which their waste is turned into a useful product. After eating a snack, children can put food leftovers in a composting container rather than in the garbage can. (You may wish to compost fruits and vegetable scraps but not meat and dairy product waste, which can attract vermin.) These food scraps can be added, along with appropriate quantities of green and brown material, to an outdoor compost station where they will biodegrade. Generally, a 2:1 ratio of green (food scraps, grass clippings, fresh weeds) to brown (leaves, straw, pine needles, shredded newspaper) material is recommended. The compost generated can be used on a school garden or around flower beds. Children may enjoy guessing how long different food items will take to biodegrade, helping to turn the material to facilitate its breakdown into compost, or helping to spread it on garden beds.

Benefits of Purchasing Sustainable Products

Many schools are adopting and implementing sustainable purchasing policies. One simple way that schools can help the environment is by purchasing paper that is certified sustainable. Paper certification programs, such as Sustainable Forestry Initiative, provide an assurance that the paper comes from sustainable sources.

An important source for paper fiber in the United States is private family forests certified by the American Tree Farm System. The landowners follow strict environmental standards as they manage their forests. When schools choose certified paper for their classrooms, they are helping to support the conservation of these working forests.

To learn more about why reducing waste at your center is important and to see how other GreenSchools across the country are taking action, watch PLT's short videos [Investigating Waste & Recycling](#) and [GreenSchools in Action: Waste & Recycling](#). These videos are available on PLT's YouTube channel: <https://www.youtube.com/user/ProjectLearningTree>.





Waste & Recycling Investigation Terminology

The following definitions may be useful to adult leaders as they conduct the Investigation. The terms preceded by the Word Bank logo **WB** are terms that you may want to introduce to young learners.

- WB Composting**
The controlled biological decomposition of organic solid waste, such as food scraps and yard trimmings. Through composting, organic waste materials are transformed into soil conditioners, such as humus or mulch.
- WB Garbage**
Anything that is thrown away. Most garbage ends up in a landfill. Some people also refer to this as trash or rubbish.
- Hazardous waste**
Solid waste that may cause or pose a substantial hazard to human health or the environment when improperly disposed; a material is deemed hazardous if it exhibits corrosive, ignitable, toxic, or reactive characteristics.
- WB Landfill**
A specially engineered site for disposing of solid waste on land.
- Municipal solid waste**
Unwanted materials that have been discarded, including durable goods, nondurable goods, containers, packaging, yard trimmings, and food waste. Many waste items that are discarded have the potential to be reused, recycled, or composted.
- WB Recyclables**
Waste materials that can be reprocessed for use in the manufacturing of the same type of product or a new one.
- WB Recycle**
To collect and process used materials in order to regain or reuse the materials.
- WB Reuse**
To extend the life of an item by using it again in some way.
- Vermicomposting**
Using worms to compost material.
- Waste**
Materials that have been discarded, including those that have the potential to be reused, recycled, or composted.



Getting Ready

Use the following checklist as you complete each part of the Investigation:

- ☐ Review the *PLT GreenSchools for Early Childhood Educator Guide* and obtain any necessary permissions.
- ☐ Gather the following documents and supplies to help you complete the Waste & Recycling Investigation:
 - Written plans and policies concerning waste management, recycling, and composting for your center.
 - Waste pickup and recycling service contracts.
 - Monthly and/or annual billing statements for the waste pickup and recycling services.
- ☐ Introduce the theme to your children.
- ☐ Conduct the Waste & Recycling Investigation.
- ☐ Assess your results and take action.



Introduce the Theme

1

Reading Connections

To get young learners interested in what happens to the waste at your center, read one or more children's books to them on the topic. The following books, among others, can be used to introduce recycling, reducing, reusing, composting, and where waste goes:

- *Compost Stew: An A to Z Recipe for the Earth* by Mary McKenna Siddals. Dragonfly Books, 2014. Print. ISBN-10: 0385755384.
- *I Can Save the Earth!: One Little Monster Learns to Reduce, Reuse, and Recycle* by Alison Inches. Little Green Books. 2008. Print. ISBN-10: 1416967893.
- *Nature Recycles—How About You?* by Michelle Lord. Sylvan Dell Publishing, 2013. Print. ISBN-10: 1607186276.
- *The Earth Book* by Todd Parr. New York: Little, Brown Books for Young Readers, 2010. Print. ISBN-10: 031604265X.
- *The Three R's: Reuse, Reduce, Recycle* (What Do You Know About? Books) by Nuria Roca. Barron's Educational Series. 2007. Print. ISBN-10: 0764135813.
- *Where Does the Garbage Go?: Revised Edition* (Let's-Read-and-Find-Out Science 2) by Paul Showers. HarperCollins. 1994. Print. ISBN-10: 0064451143.

2

Early Learner Worksheet

Give each child a copy of the "Where Does Garbage Go?" worksheet, found on page 19.

Have them color and cut out the pictures. Then they can classify the items by pasting each picture under the appropriate heading (Recycle, Compost, Throw Away) on a bulletin board or on their own worksheet, "Garbage Goes Here" found on page 20. The answer key can be found on page 21.

3

Learning Through Movement

You can also turn waste classification into an active game. Label three different boxes with the graphics for "Recycle," "Compost," and "Throw Away." Children can take turns putting their recycle, compost, and throw away pictures in the appropriate boxes.

Now that children know where various waste items go, they can apply what they have learned by placing waste from a snack into the appropriate containers in the classroom.





Conduct the Waste & Recycling Investigation

Name(s): _____ Date: _____

Directions: Adult leaders should complete this questionnaire, involving their early learners with the Early Childhood Engagement activities.

Part I Waste Removal

1. Does your center have a written plan and/or policy about waste disposal?

☐ Yes ☐ No

2. Who collects the waste? (Use the Recycling and Composting sections that follow to record information about your center's recycling and composting programs.)

☐ Town or municipality

☐ Private disposal service, company name: _____

☐ Other: _____

3. How much does waste removal cost? (This information will provide baseline data to allow you to assess changes after taking action.)

Month _____ Cost _____

Year _____ Cost _____



EARLY CHILDHOOD engagement



What Happens to Waste at My Early Childhood Center?

Take your learners on a guided discovery walk to help them observe how waste is handled at their early childhood center. Inside, they can look for garbage cans, recycling bins,

and even compost containers if they are used. Outside, they can look for waste and recycling dumpsters. From a safe distance, they can count the number of dumpsters. They can also compare the size of the dumpsters to the indoor garbage cans and recycle bins.

Once children know where the recycle bins are located, they can create art to decorate them. This will make the bins more noticeable and may encourage people to recycle more. Slogans could be added, for example: "Recycle Here!" "Save the Earth!" "Reduce, Reuse, Recycle!"



Conduct the Waste & Recycling Investigation

4. If figures are available from your bill, what is the weight or volume of waste that is being thrown away by your center each month or each year? (This information will provide you with baseline data to allow you to assess changes after taking action.)

Month_____ Weight/Volume_____

Year_____ Weight/Volume_____

5. To what type of facility is the waste taken? (For example, is it a landfill or an incinerator?)

6. Where is this facility located, and approximately how far is it from your center?

7. Brainstorm and then record a list of ways that the waste removal practices could be improved.

EARLY CHILDHOOD engagement



Where Does Garbage Go?

Discuss how waste from the center is picked up by garbage trucks and taken to a facility. Use a map to show learners where the facility is located and what's around it. Ask them if they think it is close or far from the center.





Conduct the Waste & Recycling Investigation

Part II Recycling

1. Does your center have a written plan and/or policy about recycling?

☐ Yes ☐ No

2. Is there a recycling program at your center?

☐ Yes (Continue with question 3) ☐ No (Answer the question below, then go to Part III on Composting.)

Is there a need for a recycling program at your center?

☐ Yes. Briefly explain what your center could recycle: ☐ No. Briefly explain why not:

3. Who collects the center's recyclables?

- ☐ Town or municipality
☐ Private service, company name: _____
☐ Other: _____

4. To what type of facility do recyclables go once they are collected, and how far is it from your center?

5. How much does the recycling service cost?

Month _____ Cost _____

Year _____ Cost _____

6. Does your center receive income from recyclables?

☐ Yes. Approximately how much? _____

EARLY CHILDHOOD engagement



Use a map to show learners where the recycling facility is located and what's around it. Ask them whether they think it is close to or far from the center. Discuss how the recycling truck picks up the items and takes them to the facility.



Conduct the Waste & Recycling Investigation

7. If figures are available from the recycling service, what is the weight or volume of items being recycled?

Month _____ Weight/Volume _____

Year _____ Weight/Volume _____

8. Which of the following items are recycled? (Check all that apply.)

- | | | |
|---|---|--|
| <input type="checkbox"/> Paper | <input type="checkbox"/> Aluminum containers | <input type="checkbox"/> Plastic bottles |
| <input type="checkbox"/> Printer cartridges | <input type="checkbox"/> Batteries | <input type="checkbox"/> Copier cartridges |
| <input type="checkbox"/> Steel food cans | <input type="checkbox"/> Glass bottles and jars | <input type="checkbox"/> Other _____ |

9. Where are recycling bins located? (Check all that apply.)

- | | | |
|--|---|-------------------------------------|
| <input type="checkbox"/> Classrooms | <input type="checkbox"/> Hallways | <input type="checkbox"/> Office |
| <input type="checkbox"/> Copy room | <input type="checkbox"/> Teacher workroom | <input type="checkbox"/> Playground |
| <input type="checkbox"/> Lunch or Break Room | <input type="checkbox"/> Other _____ | |

10. Are the recycling bins clearly labeled?

- ☐ Yes ☐ No

Are training or educational programs on recycling compliance provided to ensure that the recycling bins are properly used?

- ☐ Yes. Briefly describe: _____ ☐ No

11. Brainstorm and record a list of ways that recycling efforts could be improved.



Conduct the Waste & Recycling Investigation

Part III *Composting*

1. Is there a compost program at your center?
☐ Yes ☐ No (Skip to question 7)
2. What does your center compost? (Check all that apply.)
☐ Grass clippings ☐ Yard waste
☐ Leaves ☐ Fruit and vegetable waste from food preparation, snacks, and lunches
☐ Other (describe): _____
3. Where are the indoor collection bins for food waste located?
4. Where are the outdoor compost bins located?
5. What happens to the compost material after it's created? (For example, is it used to enrich gardens?)
6. Is there a vermicomposting program? (Vermicomposting is the process of using worms to compost material.)
☐ Yes ☐ No
7. If your center does not have a compost program, explain how your center could start one and what materials could be composted.
8. Brainstorm and record a list of ways that composting efforts could be improved.



Conduct the Waste & Recycling Investigation

Part IV Waste Analysis

WASTE ANALYSIS CHART

Directions: Check whether items in your room and building are mainly recycled, thrown away, composted, or taken to a hazardous waste collection site. This will help you determine whether waste items are being placed in the appropriate containers and whether items are being thrown away that could be reused, recycled, or composted. See the chart on the next page for information on how various wastes should be handled.

Types of Waste	Mainly Recycled	Mainly Thrown Away	Mainly Composted	Taken to Hazardous Waste Collection Site	Ways to Make Improvements
Individual Classrooms					
Mixed Paper*					
Used paper products**					
Cardboard					
Recyclable plastics					
Food waste (fruit and vegetable)					
Batteries					
Computers					
CFLs***					
Other					
Schoolwide or Centerwide					
Milk cartons					
Glass containers					
Ink cartridges					
Aluminum containers					
Styrofoam					
Other					

* Mixed paper includes items such as white and colored paper, magazines, and newspapers.

** Used paper products are items such as used paper towels, tissues, paper cups, and paper plates.

*** CFLs (Compact fluorescent light bulbs) must be disposed of properly because they contain very small amounts of mercury.

For more information, go to <http://www.epa.gov/bulbrecycling>.



Conduct the Waste & Recycling Investigation

WHAT TO DO WITH WASTE CHART

Type of Waste	Recycle It	Compost It	Throw It Away	Comments
Mixed paper	✓	✓		Mixed paper includes white and colored paper, magazines, and newspapers, all of which can be recycled. Most of these items can also be composted if they are clean and in small pieces or shredded.
Used paper products			✓	Includes used paper towels, tissues, cups, and plates. These items should not be recycled or composted because they can contaminate the recyclables and compost.
Cardboard and posterboard	✓	✓		These items are usually recycled, however, clean cardboard and poster board can be shredded or cut into small pieces and composted.
Recyclable plastics	✓			This includes any plastic material that is accepted for recycling by the school's recycling company. Look for recycling symbols on containers. Empty containers before placing them in the recycling bin.
Glass bottles and jars	✓			Glass containers used for food and beverages are recyclable. Empty containers before placing them in the recycling bin.
Aluminum containers	✓			Aluminum containers are recyclable. Empty containers before placing them in the recycling bin.
Styrofoam	✓		✓	Styrofoam may or may not be recycled in your community. Regardless, it should not be included with other recyclables because it can only be recycled at special facilities. Contact the companies that collect your school's waste and recycling to find out how to handle it.
Milk cartons	✓			Milk cartons may or may not be accepted for recycling; check with the company that collects your school's recyclables.
Food waste		✓		Fruit and vegetable waste, as well as coffee grounds, tea bags, and egg shells can be composted. Keep meat, bones, grease, fats, oils, and dairy products out of the compost because they can turn rancid and attract rodents and other pests.
Printer or copier cartridges	✓			Printer and copier cartridges should not be placed in the school's regular recycling bins. They have to be returned to the manufacturer for recycling. Many manufacturers provide pre-paid shipping labels or have partner retailers where you can drop off cartridges.



Conduct the Waste & Recycling Investigation

Waste Analysis Interpretation

1. Are waste items being placed in the appropriate container (garbage, recycling, or compost)?
2. After reviewing your findings, what can you conclude about the waste-management practices in the building?
3. Brainstorm and record a list of ways to reduce waste and improve recycling in the building.





Conduct the Waste & Recycling Investigation

Part V Waste Reduction, Reuse, and Purchasing

You may want to interview the staff in charge of supply purchasing and environmental policies to help find the answers to the following questions.

1. Are there policies regarding purchasing of supplies, waste reduction, and reuse? ☐ Yes ☐ No
2. Is recycled office paper purchased? ☐ Yes ☐ No

If yes, what are the specifications of the paper? (For example, what percent is postconsumer recycled content?)

3. Is the paper certified to ensure that it comes from sustainably managed forests? ☐ Yes ☐ No
4. Are any of the following strategies followed to reduce paper use?
 - Storing records electronically ☐ Yes ☐ No
 - Communicating with staff by email ☐ Yes ☐ No
 - Communicating with parents by email ☐ Yes ☐ No
 - Using online books ☐ Yes ☐ No
 - Using double-sided printing and copying ☐ Yes ☐ No
 - Reusing paper that has been used only on one side ☐ Yes ☐ No
 - Reusing scrap paper for art, notes, and so forth. ☐ Yes ☐ No



Conduct the Waste & Recycling Investigation

5. Are any of the following policies followed to save resources, reuse items, and reduce waste?

Food is served on reusable rather than disposable plates. ☐ Yes ☐ No

Metal rather than disposable utensils are used. ☐ Yes ☐ No

Reusable rather than disposable trays are used. ☐ Yes ☐ No

Unclaimed "lost" items are donated to a charity for reuse. ☐ Yes ☐ No

Gently used clothing, toys, and books are collected and donated to charities for reuse. ☐ Yes ☐ No

There are swap days or an online swap site for exchanging books, clothing, bicycles, costumes, and other items. ☐ Yes ☐ No

6. Are items purchased (other than office paper) that are made from recycled content? . . ☐ Yes ☐ No
(For example, tissues or napkins?)

If yes, briefly explain:

7. Brainstorm and record a list of ways that purchasing practices, reuse of items, and reduction of waste could be improved.





Taking Action

Complete the **Waste & Recycling Action Plan** on the next page. You can engage young learners by creating a **Classroom Action Book** on ways to reduce waste.

EARLY CHILDHOOD engagement



Classroom Action Book

Your learners can create a classroom book filled with simple waste-reduction tips. A template for making the book that highlights their art and ideas is provided on page 18.

Directions: Have children draw a picture of how they can reduce waste. Alternatively, provide a variety of pictures for them to cut out and use. Have the children paste their picture to their **My Action Plan** worksheet. Then write, or help the children write, their responses to the prompt. Each child can contribute one page and then the pages can be combined into a book.

The finished book can be shared in the classroom or scanned and uploaded on a website so that it can be shared with other classes and family members. In addition, please share your book with PLT at information@plt.org or via our **PLT Facebook Page**. The book is a wonderful way to capture what the children have learned from this Investigation.

Before children begin working on their pages, review some of the things they discovered from this Investigation that might be appropriate for the book. Some ideas include:

- Recycle paper, cans, and bottles.
- Put recyclable items in the proper container.
- Compost leftover food.
- Reuse items (reusable containers, water bottles, plates, utensils, cloth napkins, and so forth).
- Use both sides of paper.
- Use scrap paper for art.
- Hold a swap day to exchange unwanted toys, clothes, and books.
- Hold a zero-waste snack or lunch day.





Taking Action

Waste & Recycling Action Plan

Directions: Review the list of ideas for improving waste practices that you brainstormed for each part of this investigation. Prioritize the ideas and decide on a few action projects that you want to do to improve the waste practices at your center. See the next page for action project ideas.



List your action project ideas for each section of the Waste & Recycling Investigation:

Waste Removal

Recycling

Composting

Waste Analysis

Waste Reduction, Reuse, and Purchasing



Taking Action

Waste & Recycling Action Project Ideas

Here are just a few ideas to help get you started. You can check out what other PLT GreenSchools are doing by watching PLT's short video [GreenSchools in Action: Waste & Recycling](#) (available on PLT's YouTube channel at <https://www.youtube.com/user/ProjectLearningTree>) and by reading stories posted at <https://www.plt.org/project-learning-tree-greenschools-stories>.

- Reduce paper waste—for example, by photocopying and printing on both sides of paper and by saving scrap paper for notes and art projects.
- Start a recycling program, or increase recycling efforts and the types of items that are recycled.
- Start or increase composting efforts.
- Reuse items—for example, by organizing an exchange day for children to swap items they are no longer using, such as sports equipment, clothes, books, and posters.
- Encourage children and adults to use refillable water bottles, reusable lunch boxes or cloth bags, and reusable containers.



My Action Plan

worksheet



Name: _____

A large, empty rectangular box with a thin orange border, intended for students to write their action plan.

I can reduce waste by:

Where Does Garbage Go?

worksheet



Name: _____

Color and cut out each picture.






Garbage Goes Here

worksheet



Name: _____

Sort the garbage.

Throw Away	Compost	Recycle
		

Garbage Goes Here

ANSWER KEY



Name: _____

Sort the garbage.

Throw Away	Compost	Recycle
 <p>(pizza boxes are too greasy to recycle)</p>		
 <p>(used tissues are contaminated and should not be recycled)</p>		
		