

LESSON 1: Litter on the School Grounds

LESSON'S CONCEPT

Litter is packaging, paper, and other materials that have been disposed of improperly.

PURPOSE

Students explore the question: "What is litter?" They identify areas on the school grounds or nearby areas where litter is a problem and offer ways to solve the problem.

OVERVIEW

In this lesson students will:

- Sing a song about litter.
- Go on a litter walk to see whether they can find litter on the school grounds (or in a nearby area).
- Pick up litter (or conduct a visual survey) around the school grounds (or in a nearby area) and tally the number of pieces of litter by categories.
- Classify litter into items that can be reused, those that can be recycled, and those that should be placed in a trash can.
- Identify the areas which have the most amount of litter and which type of litter was most common.
- Listen to the reading of *The Wartville Wizard* by Don Madden.
- Offer some solutions to the litter problem.
- Make litter bags for cars.

CORRELATIONS TO CALIFORNIA'S CONTENT STANDARDS AND FRAMEWORKS

- Students compare the types of litter that they have found and categorize it according to materials that can be reused, recycled, or placed in a landfill.
 - "Properties of materials can be observed, measured, and predicted. As a basis for understanding this concept, students know objects can be described in terms of the materials they are made of and their physical properties." (*Science Content Standards, Grades K–12; Kindergarten; Physical Sciences, Standard 1a*)
 - "All matter has properties that can be ob-

served, defined, and recorded. Matter occupies space, it has substance, and we can measure its weight." (*Science Framework, page 41*)

- "Students collect information about objects and events in their environment." (*Mathematics Content Standards for California Public Schools, Kindergarten Through Grade Twelve, page 3*)
- In groups, students tally the number of pieces of litter by specific categories; then they compile the data from all groups.
 - "Students sort and classify objects." (*Mathematics Content Standards for California Public Schools, Kindergarten Through Grade Twelve, page 2*)
 - "Students organize, represent, and compare data by category on simple graphs and charts." (*Mathematics Content Standards for California Public Schools, Kindergarten Through Grade Twelve, page 6*)
- Listen to the reading of *The Wartville Wizard* by Don Madden.
 - Students "identify characters, setting, and important events." (*English–Language Arts Content Standards for California Public Schools, Kindergarten Through Grade Twelve, page 2*)
- Students make car litter bags.
 - "Students create original artworks based on personal experiences or responses." (*Visual and Performing Arts Framework; Visual Art: Creative Expression Component, Goal 4, page 101*)

SCIENTIFIC THINKING PROCESSES

observing, communicating, comparing, classifying, relating

TIME

30–60 minutes to prepare for the lesson; 60 minutes per day for two days to implement the lesson

VOCABULARY

litter

PREPARATION

- ___ 1. Read the “Background Information for the Teacher” at the end of this lesson.
- ___ 2. Select an area on the school grounds where students can collect (or observe) litter. If your school grounds are litter free, look for littered areas close to the school where students can collect litter safely.

Note: If you prefer not to have your students collect litter, students can observe the litter on a walk around the school grounds, but you will need to collect a pile of litter from the school grounds (or other area) for students to analyze.

- ___ 3. Make copies of the tally sheets (pages 168–172) to provide one for each group of students. Each group should have one tally sheet (note that all tally sheets are different from each other). For younger students, use the tally sheets as a class and work in one large group.
- ___ 4. Make a transparency of the “Class Summary of the Litter Collected” (page 173).

Note: You may have already done the following in a previous unit.

- ___ 5. Find out which materials are recycled in your community. (Contact the city or county recycling coordinator or the local garbage/recycling company.) Ask whether you can be sent a class set of brochures indicating which materials are recycled in your community. Students can take these home to their families. Also ask for a directory of recyclers in the community. This allows families without curbside recycling programs to find drop-off centers for their recyclables. Note that the materials that are recycled may vary from community to community.
- ___ 6. Some communities organize “antilitter” campaigns and may have educational materials (e.g., booklets, videos). If so, ask for copies for your students and use these in Lesson 5.

MATERIALS

Note: Encourage students to be conservative

when using materials in the classroom. The object is to create less waste.

Examples from the following (see the tally sheets at the end of this lesson):

- ___ Beverage containers (aluminum soda cans, plastic soda bottles, juice or milk cartons, paper or foam cups)
- ___ Paper (office white and colored copy paper, newspapers, magazines, cardboard)
- ___ Packaging (plastic sandwich bags; candy, cookie, and gum wrappers; wrappers from fast food restaurants; brown paper bags; cans; potato or corn chip bags; other wrappers for nonfood items)
- ___ Plastic (toys, eating utensils)
- ___ Other litter (food, clothing)
- ___ Chart paper or a blank transparency
- ___ One or two pairs of plastic gloves (or clean, reused plastic produce bags to use as gloves) for each group of students
- ___ Plastic or cloth sheet that can be washed and reused, or newspaper that could be recycled afterwards, on which to dump the litter for analysis
- ___ Collection bags (e.g., used grocery bags) for each team of two to three students for litter collection on the litter walk
- ___ One to four adults (classroom aide, parent, or other responsible adult) to help monitor the students and what they are picking up on the school grounds or other area
- ___ The book, *The Wartville Wizard* by Don Mad-den
- ___ Lunch-sized paper bags to make a car litter bag, one for each student
- ___ Art supplies to decorate the bag
- ___ Yarn or pipe cleaners to make a handle for the car litter bag

PRE-ACTIVITY QUESTIONS

- A. Select two students; one to be a “litterbug” and one to be a “neaterbug.” Provide several typical pieces of litter (e.g., a can, a piece of paper, and several packaging materials, such as a potato chip bag and candy wrappers). Give these to the litterbug. Provide an empty bag to the neaterbug.

- B. Teach to students the song, “Here Comes a Litterbug” (page 167), which is sung to the tune of “Have You Ever Seen a Lassie?” and have them sing the song as the litterbug and neaterbug act out their roles in front of the class.
- C. Ask students: What is a *litterbug*? *Someone who litters.*
- D. Write the word *litter* on the board.
- E. Ask: What is litter? *Trash that is dropped on the ground. Trash scattered on the ground. Trash that is not in its proper place. Litter is cans, paper, plastic bags, and other garbage that is thrown on the ground at school, in the cities, in parks, into rivers, on beaches, and all other places.*
- Where have you seen litter? *On the school grounds, in the park, on our street, in a shopping center.*
 - Who or what creates litter? *People who drop the trash on the ground; wind that spreads trash from an open garbage can; domestic animals, like cats and dogs, and wildlife, like raccoons and bears, that get into garbage cans and bins and spread trash while looking for food.*
 - Who made the materials that make up litter? *People.*

Note: When scientists refer to forest *litter*, they mean the leaves, branches, and other plant parts that have fallen on the forest floor. In this lesson *litter* refers to human-made objects which are disposed of improperly on the ground.

- Why do you think people litter? *Some people don't want to make the effort to take their trash to the garbage can; they don't care; they don't think that littering creates any problems; they figure that someone else will clean it up.*
- What do you think when you see trash in the street, or on the school grounds, or when you see someone throwing trash on the ground, out a car window, or even trash blowing out the back of a pickup truck? *It doesn't matter; I don't like it because it looks dirty; it makes the area look messy; it makes me mad; I don't care; I don't like it, but I can't do anything about it.*
- Have any of you ever picked up someone else's litter on the street and thrown it away in a trash can?

- If so, why did you do it?
- What did you think about picking up someone else's trash?

PROCEDURE

- A. Tell students that they will be going on the school grounds to collect (or observe) some litter. They will analyze and record what they find.

Note: If you prefer not to have students pick up litter, take students on a walk on the school grounds (or other selected area) and have them record on their tally sheets what they see. Back in the classroom complete the transparency, “Class Summary of the Litter Collected.” Then do section “F.” Show the students the pile of litter you personally collected and complete section “G.”

- B. Ask students:
- How much litter do you think we will find on the school grounds (or other selected area)? Students can estimate the number of plastic or paper bags that the whole class might fill full of litter. Record their estimates on a piece of butcher paper or a transparency, which will allow the class to keep an ongoing record.
 - What types of litter do you think we will find? List students' responses on the butcher paper or transparency.
 - What type of litter do you think you will find the most of? Circle that item on the list.
- C. Display the different types of litter (e.g., beverage containers, paper, packaging, plastic) listed in the “Materials” section.
- Show the transparency, “Class Summary of the Litter Collected.”
 - Have students select from your pile of litter the various types of litter indicated on the transparency.
- D. Discuss with students the rules for the litter walk. If students will be collecting litter, they should follow these safety rules:
- Wear plastic gloves (or cover hands with plastic sandwich bags) when handling the litter.
 - If you are not sure what something is, ask your teacher or another adult who is with your class before touching it.

- Work together, stay with your class, and take turns with your partner or group.

Note: Consider making a list of things you do not want the students to pick up; e.g., cigarette butts, broken glass, food, pins, needles, and syringes. You might tell them that if they find items on this list, they should ask you or another adult to dispose of them properly.

SAFETY NOTE: Syringes are extremely dangerous and can be the source of a deadly disease. Adults should not touch them directly; use tongs or forceps to pick them up to avoid any contact with the skin. Place the item in a hard, covered container. Call the health department to determine a safe disposal site.

- E. Divide the class into five groups. For younger students you might want to do this as a class activity. Do “Option #1” or “Option #2” of the following:

Option #1

Students will complete a tally sheet as they collect or observe the litter.

- Provide a different tally sheet for each group. (Note that there is a “Tally for Beverage Containers Litter,” a “Tally for Paper Litter,” a “Tally for Packaging Litter,” a “Tally for Plastic Litter,” and a “Tally for Other Litter.”)
- Go over with students from each group what they are supposed to collect.
- Provide a plastic grocery sack and one or two pairs of gloves (or plastic bags to use as gloves) for each group.
- Lead students to the designated area (selected in “Preparation” step “1”) for picking up the litter.
- Ask them to stay in their groups as they use gloves to collect the types of litter indicated on their tally sheets. (One student can hold the bag, another student can place a tally mark next to the type of item collected, and the other students in the group can pick up litter, identifying each item collected and placing it in the bag.)
- If available, assign an adult to supervise each group. Otherwise, you will need to make sure that each group is picking up what it was assigned to pick up.
- After litter has been picked up, return to the classroom.

- Determine the amount of litter collected, by volume, and the number of equal-sized bags that hold the litter. Third-grade students could weigh the litter and record the weight on a chart.
- Project the transparency of the chart, “Class Summary of the Litter Collected.” Have students share their tally sheets as you record the numbers on the chart.

Option #2

Students collect the litter first. Back in the classroom, students separate all the litter collected according to categories listed on the tally sheets. Then each group completes its own tally sheet.

- Lead students to the designated area (selected in “Preparation” step “1”) for picking up the litter.
 - Provide a plastic grocery sack and one or two pairs of gloves (or plastic bags to use as gloves) for each group.
 - Encourage all groups to collect as much litter as possible.
 - Have groups bring the litter to the classroom.
 - Determine the amount of litter collected, by volume, and the number of equal-sized bags that hold the litter. Third-grade students could weigh the litter and record the weight on a chart.
 - Dump the litter on a plastic or cloth sheet.
 - Provide tally sheets (and additional plastic gloves if needed) to groups. Option: Have students brainstorm categories and create their own charts.
 - Ask students to separate the litter according to their tally sheets and place the litter in piles by categories.
 - Have groups count the number of specific pieces of litter listed on their tally sheets and record the information on their tally sheets. Make sure that items of litter are not counted twice.
 - Project the transparency of the chart, “Class Summary of the Litter Collected.” Have students share their tally sheets as you record the numbers in the chart.
- F. While projecting the completed transparency of the “Class Summary of the Litter Collected,” ask students the following:
- What kinds of litter did you find?

- What did you find most often? Paper? Cans? Glass? Plastic bags? Newspapers? Why do these things end up as litter instead of other things?
 - What did you find the least of?
 - What items seem to become litter because of their design or use (e.g., six-pack rings, bottle caps, scrap paper, plastic lunch bags, fast food drink lids, and straws)?
 - What areas contained the most litter? Why? What types of litter were most common in this area?
 - How did the school grounds (or other selected area) look after you finished?
 - What do you think about the work you did?
- G.** Read to students *The Wartville Wizard* by Don Madden and show the illustrations. Ask students:
- What did the wizard see when he went outside? *He saw that it was not a perfect place. He saw trash (litter).*
 - How did the trash (litter) get there? *People threw it on the ground.*
 - What did the wizard do first about the litter problem? *He picked it up.*
 - What did the wizard do next about the litter problem? *He made the litter stick to the person who threw it on the ground.*
 - What did the people do when the litter stuck to them? *They got angry and had the sheriff visit the wizard to arrest him.*
 - What made the people stop littering? *The wizard explained to them that he had been picking up their trash, and he finally made their own trash stick to them so they would realize what they were doing. The people became embarrassed and promised not to litter any more.*
- H.** Ask students what they could do with the litter they collected on the school grounds (or other selected area). Can it be reused? Could it be recycled?
- If students do not already know, describe to them those items that can be recycled in their community. Show examples, using items from the litter pile.
 - Ask students what happens to things that are recycled. *They are made into new*

items.

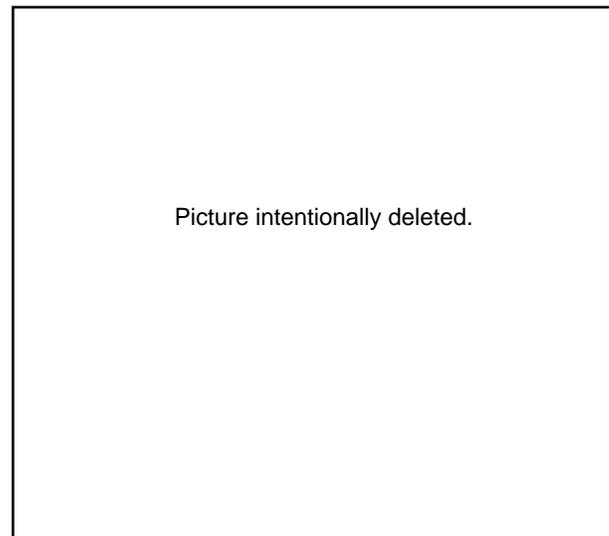
Note: Additional information and lessons on recycling are included in the K-3 Module, Unit 2, and the 4-6 Module, Unit 2.

- Have students classify litter into (a) litter that can be reused; (b) litter that can be recycled; and (c) litter that cannot be reused or recycled and should therefore be placed in a trash can.

Note: Some things might be recyclable only if they are not too soiled or dirty. For example, if newspaper is muddy, it should be put in a waste container; some soiled things, such as cans, could be rinsed off.

Homework Assignment: Have students keep a tally sheet of, or record in their journals, the amounts and types of litter they see as they go to and from school.

- I.** Discuss the homework assignment concerning students' observations of litter. Have students tally the types of litter they saw. How much of the litter do they think was thrown out of a car? (In "Application" students will make car litter bags.)



Students in Gayle MacDonald-Gura's, third-grade class at Lower Lake Elementary School tally the types of litter they saw to and from school.

DISCUSSION/QUESTIONS

Discuss with students the following:

- What is the problem with litter? *It is ugly, unhealthy, unsafe for people and wildlife.* (The topic of litter's effects on wildlife will be addressed further in Lesson 2.)
- Whose problem is "litter"? *Other people, ours.*

- What do you think about having litter on the school grounds (or other areas)? *We don't like it.*
- What can we do to reduce the litter on campus (or other selected area)? *Clean it up; don't litter; teach others not to litter.*
- Who can help? *Our friends, teachers, parents, custodians.*
- What can we do to keep ourselves from littering? *Just don't do it; wear clothes with pockets and put wrappers in pockets.*

Note: Keep several bags of litter to use in Lesson 3 and Lesson 4. You will need to select clean pieces of litter to use in Lesson 3.

APPLICATION

A. Ask students:

- In the past, when you saw an empty soda can on the school grounds, what did you usually do? *Kick it; play catch with it; leave it; pick it up and throw it in the trash; put in a recycling container.* If students said they used to leave the can on the ground, ask them why they did so. *It's dirty; I didn't throw it on the ground, someone else did; they pay other people to clean up trash; it could be dangerous.*
- Now if you see an empty soda can on the school grounds, what would you do? What could you do?

B. Repeat the litter pickup over several days to discover what types of materials are being discarded regularly. Have students organize, represent, and compare the litter data by making a simple graph or chart.

- Ask students where the litter comes from, who puts it there, and what can be done to discourage littering.
- Consider experimenting with the placement of waste containers (discuss this with the school custodian). Provide a waste container in the most littered areas, add more containers in certain areas, or create containers that are more attention-getting (e.g., students could paint them).

C. Have students record in their journals how they would solve the litter problem on their school grounds or other areas that they studied.

Note: For younger students, have them discuss as a class how they would solve the campus litter

problem. Then ask them to draw a picture in their journals of one thing that they can do.



Submitted by Lynda Mooney, first-grade teacher, Las Palmas Elementary School, National School District.

Note: In Lesson 5 students will be making posters to discourage littering on school grounds.

- ### D. Have each student make a litter bag for his or her family's car. This can be made from a lunch-sized brown paper bag. Provide art materials for students to decorate the bags. Handles can be made from yarn or pipe cleaners. Older students could sew litter bags from cloth and line the cloth bags with plastic bags.

Project Idea: Encourage students to participate in statewide cleanup events, such as the Coastal Cleanup Day. For information on the Coastal Cleanup Day, contact the California Coastal Commission at 1-800-COAST-4U or visit its Web site at www.ceres.ca.gov/coastalcomm/.

EXTENSIONS

- Assign students to groups of four or five and have them create a collage with clean litter they collected. Ask students whether rearranging the litter (by making a collage) makes it more appealing.
- Have students graph the litter by taping the litter to butcher paper. Have students repeat their litter walk, record their results, and create a new graph to show whether there has been any change.
- Have students create a bulletin board of pictures of litter free and beautiful areas. These could be placed in the school's office, teachers' lounge, or cafeteria.
- Have students count the number of outdoor trash cans on the school grounds. Do they keep all the trash contained? Are additional cans needed to eliminate littering?

E. Ask your students to think about this idea: Does the kind of litter that is found tell them something about the neighborhood? How could that be so? Show students several pieces of litter you have chosen in advance: a few school papers from a student’s notebook; packages from a fast-food store, e.g., wrappers, cups, bags; some movie ticket stubs and a page from the newspaper’s movie section with some names of movies circled. After students have examined the evidence, ask them:

- What does this litter tell you about the neighborhood? *There’s a school, fast-food restaurant, and movie theater nearby; some students attending the school go to the fast-food restaurant and then to a movie theater.*
- Which of the materials can be reused or recycled, and which should be put in a trash can? (This depends on what you have chosen: pages from a school notebook might go in mixed office paper; some fast-food restaurants’ cardboard boxes are plastic-coated and, therefore, cannot be recycled, but their bags can be recycled with paperboard and cardboard; card stock movie ticket stubs can be recycled with cardboard; the newspaper can be recycled.)
- What can we do to encourage people in this neighborhood not to litter?

RESOURCES

Video

Reduce. Protecting Our Environment series. Pied Piper, 1992 (14 minutes).

Provides information on how to reduce the amount of trash that is thrown away. Explains how overpackaged and disposable items create excess trash and waste natural resources.

Books

Brown, Laurie Krasny, and Marc Brown. *Dinosaurs to the Rescue! A Guide to Protecting Our Planet*. New York: Little, Brown, and Company, 1992.

Illustrated with colored cartoons and has dinosaurs encouraging readers to use less, use again, and participate in projects that enhance the environment.

Foster, Kelli C., and Gina Clegg Erickson. *Where Is the Treasure? Get Ready . . . Get Set . . . Read!*

series. Hauppauge, N.Y.: Barron’s Educational Series, Inc., 1995.

Simple-to-read text and colored illustrations describe how a group of animals cleaned up their environment. (This book is featured in Lesson 5.)

Leedy, Loreen. *The Great Trash Bash*. New York: Holiday House, 1991.

A story about how the inhabitants in Beaston solved their trash problem by deciding to make less trash, to fix things, to clean up litter, and to build a recycling center. (This book is featured in Lesson 3.)

Madden, Don. *The Wartville Wizard*. New York: Simon and Schuster, 1986.

Tired of cleaning up other people’s trash, the Wartville Wizard makes litter stick to the person who threw it away.

HERE COMES A LITTERBUG

(Sung to the tune of “Have You Ever
Seen a Lassie?”)

Oh, here comes a litterbug, a litterbug,
a litterbug,

Here comes a litterbug, see what it’ll
do.

I can choose not to be a litterbug, a lit-
terbug, a litterbug,

I can choose not to be a litterbug, and
so can you.

Oh, here comes a neaterbug, a neater-
bug, a neaterbug,

Here comes a neaterbug, see what it’ll
do.

I can choose to be a neaterbug, a neat-
erbug, a neaterbug,

I can choose be a neaterbug, and so can
you.

Litter is garbage out of place—improperly disposed packaging, paper, and other materials. Most litter is not only visually unpleasant but also dangerous to people and other living things (this topic is addressed in Lesson 2). In addition, litter is a waste of resources, which could be reused or recycled.

TALLY FOR BEVERAGE CONTAINERS LITTER

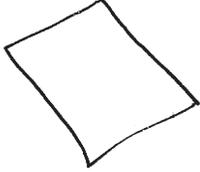
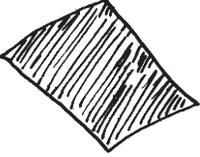
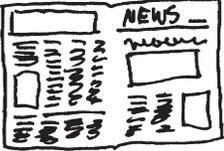
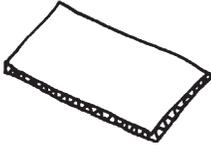
Group Sheet

Picture of beverage container litter	Type of beverage container litter	Tally
	Aluminum soda cans	
	Plastic soda or water bottles	
	Juice or milk cartons	
	Paper or foam cups	
	Other	

TALLY FOR PAPER LITTER

(Not beverage containers and not packaging)

Group Sheet

Picture of paper litter	Type of paper litter	Tally
	White office copy paper	
	Colored office copy paper	
	Newspaper	
	Magazine	
	Cardboard	
	Other	

K-3 Module
Unit 4

TALLY FOR PACKAGING LITTER

(Not beverage containers)

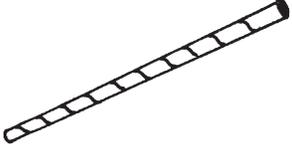
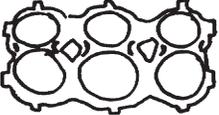
Group Sheet

Picture of packaging litter	Type of packaging litter	Tally
	Plastic sandwich and grocery bags	
	Candy, cookie, and gum wrappers	
	Potato chip or corn chip bags	
	Wrappers from fast-food restaurants	
	Brown paper bags	
	Metal cans (not for beverages)	
	Other wrappers for nonfood items	
	Other	

TALLY FOR PLASTIC LITTER

(Not packaging)

Group Sheet

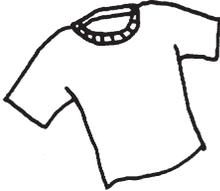
Picture of plastic litter	Type of plastic litter	Tally
	Toys	
	Eating utensils (forks, spoons)	
	Straws	
	Cups	
	Six-pack holders	
	Other	

K-3 Module
Unit 4

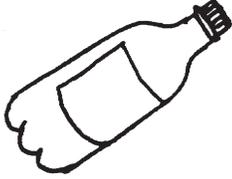
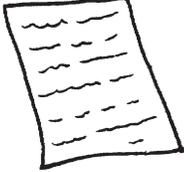
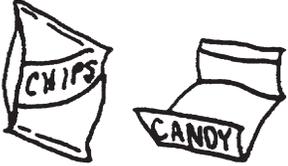
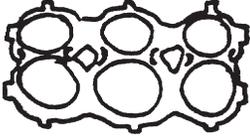
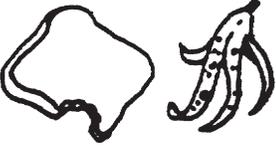
TALLY FOR OTHER LITTER

(Not packaging, not beverage containers, not plastic, not paper)

Group Sheet

Picture of other types of litter	Other types of litter	Tally
	Food	
	Clothing	
	Polystyrene (Styrofoam)	
	Wooden objects	
	Other	

CLASS SUMMARY OF THE LITTER COLLECTED

Picture of type of litter	Type of litter	Class tally (number of pieces)
	Beverage containers	
	Paper	
	Packaging	
	Plastics	
	Other litter	
Total pieces of litter		

BACKGROUND INFORMATION FOR THE TEACHER

Litter is usually dropped by people, who often litter an area when they feel no ownership for the property. Some people assume that someone else will clean up after them. Still others find it inconvenient to carry their trash to the nearest garbage can.

Litter can also be spread by wind (from open garbage containers) or by domestic pets or wildlife that get into garbage cans. In communities that use storm drains and flood channels to carry rainwater away, litter can be washed into them and pollute waterways. Debris in creeks and marine habitats can be harmful to wildlife.

Beauty, safety, and community pride are values that support a litter-free environment. When litter is picked up and put where it belongs with recyclables or in the trash can, there are many benefits. A litter-free environment poses less potential harm to humans and wildlife (e.g., children cutting themselves on broken glass, birds and other animals becoming entangled in plastic bags and beverage can yokes). In addition, a litter-free environment yields neat-looking yards, neighborhoods, streets, and school grounds. Also, parks and other natural areas can be enjoyed more for their beauty when litter is not present.

One child picking up a potato chip bag and putting it in the trash can, or picking up an aluminum can and putting it in a bin for recycling, can be a powerful agent of change for others (e.g.,

peers, older children, and adults) who observe the action. Children who feel strongly about having orderly surroundings can assert some control over their environment by picking up litter when they see it. The result is an assertion of individual power in having their space cleaner. Some children may respond positively to their experience in keeping their school environment clean, because the action provided them with a sense of pride and accomplishment. Students may recognize an individual's personal responsibility for properly managing the resources he or she uses.

Finally, not all children will share the values of order and neatness. By emphasizing the importance of putting litter in its proper place and including the recycling bin where items can be made into new material, you can appeal to a different value besides neatness: that of helping to use materials over and over to conserve natural resources. It is hoped that students involved in cleaning up litter at school will more likely grow into adolescents and adults who will also ensure that litter is managed in their homes and neighborhoods.