



*City of Tucson Recycling Education*



**A Middle School Curriculum  
on Recycling**

# Talking Trash in Tucson

A Middle School Curriculum on Recycling

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- ☛ Students participate in a discussion on solid waste management in Tucson, work in small groups to estimate the “lifetimes” of certain landfill items, share ways to reduce, reuse, recycle, and compost, and write a “Letter to the Editor” about waste management practices in Tucson.

### **Lesson 2: What We Can Recycle**

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- ☛ Students learn what is recyclable in Tucson and review methods of source reduction, then conduct an inventory of items found in a home refrigerator and determine ways to reduce the amount of garbage they produce at home.

### **Lesson 3: Using Recycled Materials**

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- ☛ Students select a recyclable material and research the path by which it becomes a new, useable product, thus “closing the loop” in the resource use cycle.

### **Lesson 4: Taking Action**

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- ☛ Students create posters to inform the Tucson community about the importance of recycling and submit their posters to the *Look What’s New With Do More Blue* Poster Contest sponsored by City of Tucson Environmental Services.

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## Dear Teacher,

Welcome to **Talking Trash in Tucson: A Middle School Curriculum on Recycling**. All of the materials for Talking Trash in Tucson are available at [www.outreach-scheduling.org/talkingtrash.php](http://www.outreach-scheduling.org/talkingtrash.php).

### The goals of **Talking Trash in Tucson** are:

- To increase participation in recycling in Tucson (*Do More Blue!*).
- To reduce recycling contamination (making sure non-recyclable items stay out of the Blue Barrels).
- To provide engaging activities that meet Arizona Department of Education standards.
- To instill an environmental ethic in students.
- To encourage student participation in the *Look What's New with Do More Blue* Poster Contest.

### How to get the most out of **Talking Trash in Tucson**:

- ☐ Review the Teacher Background Information and AZ Department of Education Academic Standards.
- ☐ Conduct Lessons 1-4 with your classes in the suggested order, as they build on each other. (However, you may select to do only a portion of the program materials as they best fit into your existing classroom curriculum.)
- ☐ Use the "Extension Ideas" listed with the lessons to explore how to make recycling an ongoing part of your classroom.

Be sure to participate in the *Look What's New with Do More Blue* Poster Contest (in Lesson 4). Grand prize winners will have their posters displayed on the side of a City of Tucson Environmental Services Recycling Truck! **Deadline entry is February 1.**

Thank you for teaching **Talking Trash in Tucson**. This program provides practical knowledge and skills that will help your students make intelligent decisions now and in the future!

Waste Reduction Staff  
City of Tucson  
Environmental Services  
[www.domoreblue.com](http://www.domoreblue.com)



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## **Lesson 1: Managing Solid Waste**

### **Trash: It Lasts a Long Time!**

#### **At a Glance:**

Students complete a worksheet while participating in a class discussion on solid waste management in Tucson. Next, students work in small groups to estimate the length of time it takes specific materials to decompose in a landfill. After considering the alternatives to landfilling all of our trash, such as reducing, reusing and recycling, students describe their concluding thoughts about waste management practices in our community in a "Letter to the Editor."

#### **Arizona Department of Education Academic Standards:**

Please refer to the Arizona Department of Education Academic Standards section for the ADE standards addressed by this lesson.

#### **Learning Objectives:**

Students will be able to:

- compare their estimates with scientific data about the length of time it takes for some trash items to decompose in a landfill.
- define reduce, reuse, recycle, and compost.
- describe how reducing, reusing, recycling, and composting can decrease the amount of trash that goes to the landfill.
- explain how reducing, reusing and recycling help to save natural resources.

#### **Materials:**

- ☐ Student Worksheet: *How Long Does Trash Last?* – photocopy one per student
- ☐ Display Sheet: *Los Reales Landfill* – use a Smart Board or overhead projector
- ☐ Display Sheet: *Trash Decomposition Times* - use a Smart Board or overhead projector
- ☐ Display Sheet: *Trash Decomposition Timeline* - use a Smart Board or overhead projector
- ☐ Display Items
  - aluminum soda can
  - banana peel
  - cotton rag
  - glass bottle
  - leather boot
  - paper bag
  - plastic 6-pack rings
  - plastic water bottle
  - steel/tin can (soup or vegetable can)
  - Styrofoam cup

**Lesson 1: Trash: It Lasts a Long Time!** *(continued)***Procedure:****Part 1: Solid Waste Management Using a Landfill**

1. Hand out the Student Worksheet: *How Long Does Trash Last?*. Instruct students to answer Questions 1-7 during the class discussion. If they don't complete the questions during the discussion, there will be time later in the lesson.
2. Direct the students' attention to the display of "trash" items in the classroom, as noted in the Display Items list. Tell students that these items are examples of what is termed "solid waste". Explain that every town or city must have a "solid waste management" system to handle the collection, transport, processing or disposal, managing and monitoring of solid waste. In Tucson, solid waste is managed by City of Tucson Environmental Services. Ask students to name other items (in addition to those on display) from home or school that may "flow" into the Tucson "waste stream" (the total flow of solid waste from homes, businesses, institutions, and manufacturing plants to final disposal.) (Note: Part of the solid waste management plan provided by City of Tucson Environmental Services includes a recycling program, *Do More Blue*. If students bring up recycling at this point, briefly discuss it here, but save the full discussion for Part 2 of this lesson.)
3. Ask students the following questions:
  - *What happens after you throw something away in the trash? Where does it go?* (Answers should identify the different steps - for example, after throwing my old socks away in the trashcan in my kitchen, I emptied the bag into a large trash barrel outside. On a certain day of the week, the trash barrel is wheeled to the end of the driveway. Then, a truck comes to pick it up. The truck takes it to the landfill where it is buried.)
  - *What is a landfill?* (a carefully designed structure built into the ground in which trash is isolated from the environment; a plastic liner is used to prevent groundwater pollution, and the trash is periodically covered with sand or similar material and compacted.)
  - *What is the name of the landfill used by the city of Tucson?* (Los Reales Landfill)
4. Using either a Smart Board or overhead projector, show the class the Display Sheet: *Los Reales Landfill*. Ask students if any of them have ever been to this landfill. The Los Reales Landfill covers approximately 350 acres. That's the size of 270 football fields put together end to end! It's located south of Los Reales Road between Craycroft and Swan Roads. About 1500 tons of garbage a day are dumped, compacted and buried in the landfill. If more time is available, discuss the landfill in more detail, including: the placement of a bottom liner; the collection of leachate (water that has percolated through the landfill); and the collection of methane gas produced within the landfill that is used to power homes in Tucson.
5. Tell students that the materials you have collected are samples of items that are sometimes tossed into the trash and end up in a landfill such as Los Reales. Ask the students:
  - *What will happen to these items if they end up in the landfill?*

**Lesson 1: Trash: It Lasts a Long Time!** (continued)

6. Have a discussion about decomposition. (Decomposition is the process by which a substance is broken down into component parts or basic elements under the proper conditions of light, air, and moisture.) Ask students:
- *Does a lot of decomposition occur within the landfill? Explain.*

Explain that when a landfill is constructed, the goal is to bury the trash so that it will be isolated from groundwater (using a plastic liner along the bottom), will be kept dry, and will not be in contact with air (by being covered with dirt daily). Under these conditions, trash will not decompose much.

7. Ask the following questions:
- *Which of these trash items do you think will take the shortest time to decompose? Why?*
  - *Will all the items decompose immediately or will they continue to take up space in the landfill? Explain.*
  - *Which items, if any, will never decompose? Why?*
8. Arrange students into small groups of 3 to 4 students. Instruct students to look at the table in Question 8 on the Student Worksheet. (You might want to display the table using a Smart Board or overhead projector.) Ask students to think about how long each of the items on display might last when buried in a landfill. Point out to students that there is not necessarily a “right answer” because various conditions (such as amount of moisture or heat) could result in some items decomposing more or less quickly.
9. Using a Smart Board or overhead projector, show the class the Display Sheet: *Trash Decomposition Times*. Tell each group to use the times displayed and come to a consensus agreement about their “best guess” of the decomposition time of each of the trash items. Students should record these times in the appropriate column in the table on their worksheet.
10. In the next column, have students record the numbers 1-10 to correctly sequence the list in order from shortest to longest decomposition time. While waiting for all groups to finish, students can complete their answers to Questions 1-6 if needed.
11. Ask the groups to share their lists in the sequence they agreed upon. Display the Student Worksheet again using the Smart Board or overhead projector and record the number next to the appropriate trash item. Do the same for the other groups. Ask students how they made some of their decisions. Draw students' attention to the discrepancies in the list. For example: Why did some groups choose to list the sheet of paper before the

**Lesson 1: Trash: It Lasts a Long Time!** *(continued)*

banana peel? At the conclusion of the discussion, reveal to students the best estimates of scientists who study decomposition of trash in landfills, who suggest the following as the most probable sequence:

1. banana peel
2. paper bag
3. cotton rag
4. leather boot
5. steel/tin can (soup or vegetable can)
6. aluminum soda can
7. plastic 6-pack rings
8. plastic water bottle
9. Styrofoam cup
10. glass bottle

Students should number the correct order in the appropriate column on the Student Worksheet.

12. Next, using a Smart Board or overhead projector, show the class the Display Sheet: *Trash Decomposition Timeline*. This timeline shows the actual amounts of time expected for each of the display items to decompose, if ever. After a brief discussion, have students record the scientists' estimations in the appropriate column.
13. Ask students to share their thoughts as to why they feel their sequence may not agree with the scientists' list. Point out that it is acceptable for scientists to have different conclusions if these are supported by good evidence.

**Part 2: Options for Solid Waste Management – Reduce, Reuse, Recycle, Compost**

1. Based on Part 1, discuss the following questions:
  - *What does the data (the scientists' approximations of decomposition time) tell you about landfills?*
  - *Do items continue to decompose and make room for new garbage or will landfills eventually fill up?*
  - *Do the trash "life spans" say anything to you about the importance of limiting the production of solid waste by a community?*
2. Tell students that the Los Reales Landfill is expected to be full in approximately 60 years. Ask the students the following questions:
  - *Where will our trash go when the Los Reales Landfill is filled?*
  - *What can we do to prolong the life of the landfill and prevent it from filling up so quickly?*

**Lesson 1: Trash: It Lasts a Long Time!** *(continued)*

3. Discuss the 3Rs: Reduce, Reuse, Recycle. Ask students to define each, and record their answers in Question 9 on the Student Worksheet.
  - Reduce - The process of decreasing the amount of waste generated.
  - Reuse - The process of using an object more than once in its same form for the same purpose or for different purposes to extend the life of the object.
  - Recycle - The process of collecting, sorting, processing, and using already manufactured materials for remanufacturing of new products.
4. In addition, food waste and yard trimmings can be composted to save space in the landfill. Ask if any students compost at home and have them describe the process. Composting is the process of collecting organic waste and storing it under conditions designed to help it break down naturally. This resulting compost can then be used as a natural fertilizer. Have students define compost in Question 9 on the Student Worksheet.
5. Refer to the Display Items and/or the list of garbage items in the table from Question 8 on the Student Worksheet. Ask students to share ideas of how they could use the 3Rs and composting to keep each item from going into a landfill. Think about what's being done at home, school, or in the community. Have students record their answers in the last column of the table.
6. Ask students for other reasons why it's important to decrease the amount of waste going into the Los Reales Landfill. Focus on these additional reasons:
  - To save natural resources.
    - Natural resources are the raw materials and energy that we get from nature.
      - Renewable natural resources (e.g., plants, animals, sunlight) can be renewed, restored, or regenerated by natural ecological cycles or sound management practices.
      - Non-renewable natural resources (e.g., petroleum, coal, copper) are materials that are considered finite in amount, or exhaustible because of their scarcity, the great length of time required for their formation, or their rapid depletion.
  - To save desert land.
    - If the Los Reales Landfill becomes full, clearing land to develop a new landfill will destroy the natural desert environment. The land as well as the plants and animals that inhabit the area are all natural resources.
  - To save money.
    - It costs approximately \$6 million per year to operate the Los Reales Landfill.
    - If a new landfill needs to be developed, it will cost money to purchase the land. In addition, as Tucson grows, that land will be located further away from the city center, resulting in higher costs of transportation to and from the landfill.

**Lesson 1: Trash: It Lasts a Long Time!** (continued)

7. Give students time to complete Question 11 on the Student Worksheet, and finish any other questions if needed.

**Part 3: Write a Letter to the Editor**

1. Read students the following prompt (you may want to post this using a Smart Board or overhead projector):

*The Los Reales Landfill will soon fill up if Tucson continues to throw away so much garbage. Community leaders are searching for another site to develop as a new landfill. The local newspaper is encouraging readers to write a letter to the editor about this issue. Be sure to include facts as well as your opinions about solid waste management in Tucson.*

2. Explain to students that they will each write a Letter to the Editor based on this prompt. They need to include the following vocabulary words: solid waste management, waste stream, Los Reales Landfill, reduce, reuse, recycle, compost, natural resources. (Note: Decide in advance if class time will be allotted to work on the letter, or if the letter will be written as a homework assignment.)

**Extension Ideas:**

- Do a simple decomposition activity at school or at home. Here's a link to get started: <http://scene.asu.edu/habitat/activities/decomposers.html>.
- Learn how to compost at home or at school at [www.tucsonorganicgardeners.org/compostinginformation.htm](http://www.tucsonorganicgardeners.org/compostinginformation.htm).
- Visit the Los Reales Landfill. For additional information, go to <http://cms3.tucsonaz.gov/es/content/landfill-tours> or call 520-791-4183.
- Submit the best "Letters to the Editor" to the local newspaper or the school newsletter.

## Student Worksheet: How Long Does Trash Last?

Name: \_\_\_\_\_ Class/Period \_\_\_\_\_ Date \_\_\_\_\_

**Instructions:** Read and record a response for each question below as directed by your teacher.

1. What is the waste stream?

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2. How does Tucson manage its solid waste?

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3. Describe the features of a landfill.

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4. What will happen to the trash items on display if they end up in the landfill?

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5. Which item do you think will take the shortest time to decompose?

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6. Will all the items decompose immediately or will they continue to take up space in the landfill? Explain.

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7. Which items, if any, will never decompose?

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### Student Worksheet: How Long Does Trash Last? (continued)

8. Complete the table below. In the first column, work with your group to estimate the time that each item of trash might take to decompose in a landfill based on the time ranges provided by your teacher. In the second column, number the items in order from fastest to slowest decomposition rates (1-10). Complete the additional columns at the direction of your teacher.

Trash Item	Group Consensus Decomposition Times	Group Consensus Decomposition Order (shortest to longest, 1-10)	Decomposition Time Estimated by Scientists	Decomposition Order Estimated by Scientists (shortest to longest, 1-10)	Options (Reduce, Reuse, Recycle, Compost)
Aluminum soda can					
Banana peel					
Cotton rag					
Glass bottle					
Leather boot					
Paper bag					
Plastic 6-pack rings					
Plastic water bottle					
Steel/tin can					
Styrofoam cup					

9. Define each of the following options for solid waste management.

a. Reduce:

b. Reuse:

c. Recycle:

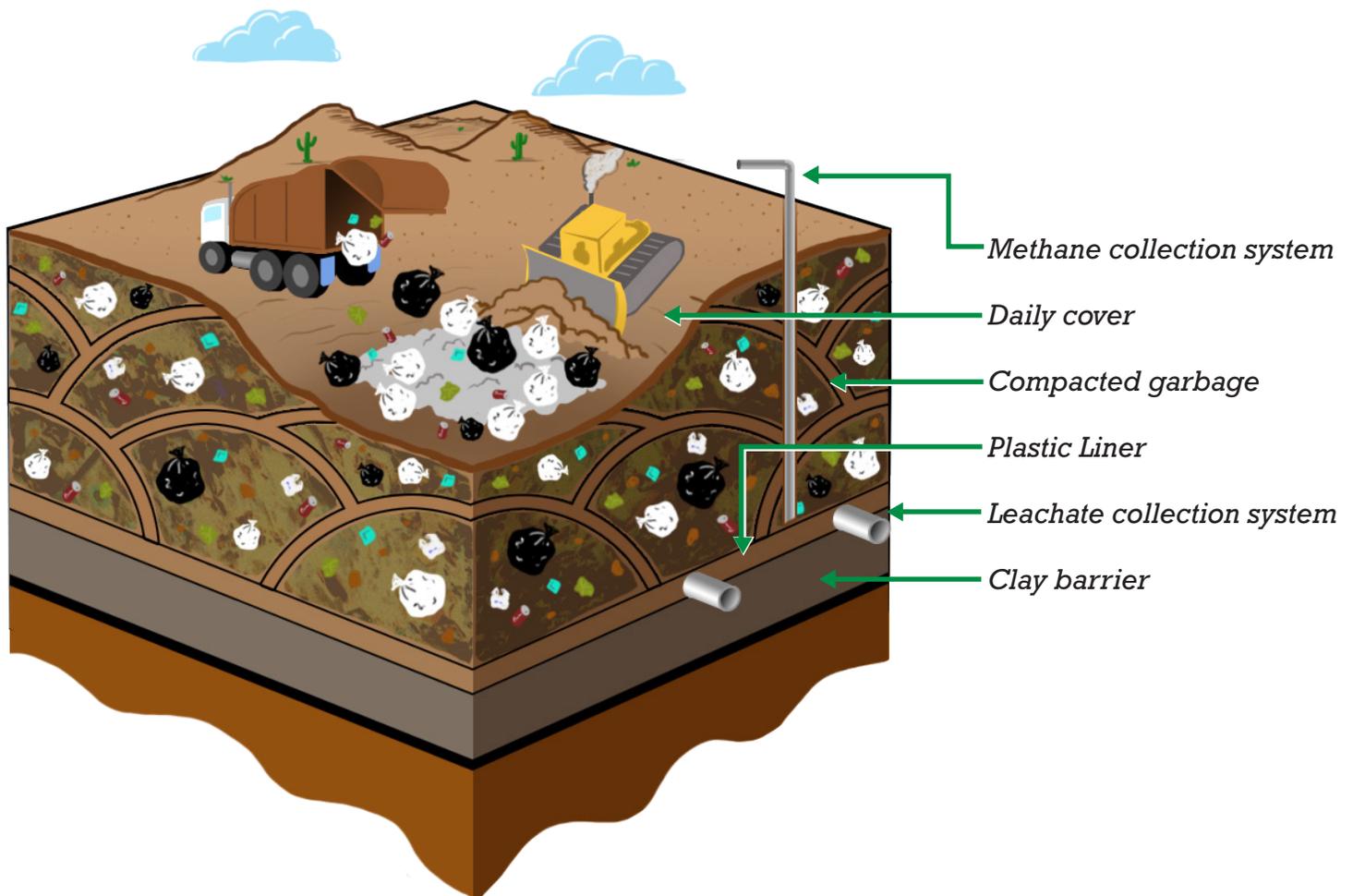
d. Compost:

## ***Student Worksheet: How Long Does Trash Last?*** *(continued)*

10. Complete the Options column of the above table by deciding if you can reduce, reuse, recycle or compost each item instead of throwing it in the trash. (Note: There may be more than one option, or no option.)

11. List four different trash items and the natural resource from which each is derived. Indicate if the natural resource is renewable or non-renewable.

### Display Sheet: Los Reales Landfill



**Display Sheet: Trash Decomposition Times**

**Instructions:** Work with your group to estimate the time that each item of trash might take to decompose in a landfill. Record these times in the appropriate column in the table in the Student Worksheet: *How Long Does Trash Last?*

- **3 to 4 weeks**
- **1 month**
- **5 months**
- **40 to 50 years**
- **80 to 100 years**
- **200 to 500 years**
- **450 years**
- **1 million years**
- **unknown? forever?**
- **unknown? forever?**

## Display Sheet: Trash Decomposition Timeline



## Lesson 2: What We Can Recycle

### Blue Barrel Basics

#### At a Glance:

In this lesson, students identify what can be recycled in the *Do More Blue* recycling program. Students review methods of reducing, reusing, recycling, and composting. They work together to identify ways to apply these methods to a variety of consumable products. As a homework assignment, students conduct an inventory of the items found in a home refrigerator. Students present their findings to the class, and share ways to further reduce the amount of garbage they produce.

#### Arizona Department of Education Academic Standards:

Please refer to the Arizona Department of Education Academic Standards section for the ADE standards addressed by this lesson.

#### Learning Objectives:

Students will be able to:

- ☛ identify recyclable and non-recyclable materials in the *Do More Blue* recycling program.
- ☛ describe ways that materials can be reduced, reused, recycled or composted.

#### Materials:

- ☐ Display Sheet: *Look What's New With Do More Blue* – use a Smart Board or overhead projector
- ☐ Student Worksheet: *Roll out the Blue Barrel* – photocopy one per student
- ☐ Student Worksheet: *Recyclables in the Refrigerator* – photocopy one per student

#### Procedure:

##### Part One: Roll Out the Blue Barrel

1. Explain to the students that during this lesson they will learn how to recycle through the City of Tucson's Recycling Program, *Do More Blue*. In addition, they will learn about other methods of source reduction (ways to decrease the amount of waste they produce).
2. Ask students:
  - *What are some methods of source reduction that you learned about in Lesson 1?*

Briefly review the definitions of the 3 Rs: reduce, reuse, and recycle (from Lesson 1). Explain that it's important to consider the order of the words, because that's the order in which we should try to accomplish them. Also, briefly review composting.

3. Using a plastic bag as an example, ask students to name several ways to reduce the need for using a plastic bag (buy less, carry items by hand if not too many, use a cloth bag). Next, have students name various methods for reusing the plastic bag (bring it back to the store on their next shopping trip, use it to hold loose things at home, use it to clean up after your dog). List their suggestions on the board.

**Lesson 2: Blue Barrel Basics** *(continued)*

4. Ask students the following question:

- *What would you do with a plastic bag that had holes in it or was ripped apart?*

Explain to students that once a plastic bag can no longer be used, if it ends up in the landfill, it can take hundreds or even thousands of years to decompose. This not only wastes space in the landfill, but it also requires the use of natural resources (like petroleum products) to make new plastic bags (to replace the ones thrown away). Instead, we can reduce our need for plastic bags by using (and reusing) cloth bags or sturdy plastic bags. Remind students about the third R: Recycling. Ask them: *Can we recycle plastic bags in Tucson?* Explain that you'll revisit this question after the next activity.

5. Present the Display Sheet: *Look What's New With Do More Blue* using a SmartBoard or overhead projector. Ask students the following questions:

- *Do you use a Blue Barrel for recycling at home?*
- *If not, do you take your recyclables to a Neighborhood Recycling Center?*

Point out that this display sheet shows the many things that can be recycled in Tucson. We can put all of our recyclables into one recycling container; this is called single stream recycling.

Even if families don't have their own Blue Barrel, there are numerous Neighborhood Recycling Centers located across Tucson. (A map can be found at <http://cms3.tucsonaz.gov/es/neighborhood-recycling-centers>.)

6. Ask students:

- *Where does your recycling go once it is picked up?*

Tucson's recycling is taken to a Materials Recovery Facility (MRF) where the different types of items (paper, plastic, glass, aluminum, steel/tin, etc.) are sorted, bundled, and then shipped out to places in Arizona, across the U.S., and all over the world to be recycled. A new state-of-the-art MRF opened in July 2012 near Ajo and Alvernon, so Tucsonans can now recycle even more items. This is what is meant by the saying *Look What's New With Do More Blue*.

7. Hand out the Student Worksheet: *Roll Out the Blue Barrel*. Explain to students that they will work in pairs to complete the table in Part 1 (but each student will complete his/her own worksheet). For each item, they need to determine the following:

- What is the original source (from which natural resource does the product originate: trees, petroleum, metal, sand)?

**Lesson 2: Blue Barrel Basics** *(continued)*

- Can the product be reduced, reused and/or recycled?
- Can the product be composted?
- Must the product be thrown away in the garbage?

Students should “test” themselves to see how much they already know about what can go into the Blue Barrel, but they can refer to the Display Sheet as needed.

8. When students are finished, review each of the items in the table, calling on different students to answer. Items not shown on the Display Sheet: *Look What’s New With Do More Blue* cannot be recycled in the Blue Barrel. Be sure to include a discussion of these additional items that cannot be recycled in the Blue Barrel:

- Plastic bags cannot be recycled in the Blue Barrel (because they clog the machinery at the MRF). However, they can be recycled by taking them to local stores such as Bashas’, Food City, Fry’s, Safeway, Target and Walmart. (A City of Tucson ordinance requires plastic bag recycling by retail establishments operating more than 10,000 square feet of retail space at two or more locations.) These stores have a disposal box for all kinds of plastic bags – grocery bags, newspaper bags, produce bags, cereal bags, ziplock bags, dry cleaning bags, even the plastic wrap around paper towels and toilet paper. The plastics are then delivered to a different MRF that can recycle them. (More information can be found at [www.bagcentralstation.com](http://www.bagcentralstation.com).)
- Hazardous materials CANNOT be recycled in the Blue Barrel. They can be safely disposed of through the City/County Household Hazardous Waste program. (More information can be found at <http://cms3.tucsonaz.gov/es/content/household-hazardous-waste>.)

**Part Two: Recyclables in the Refrigerator**

1. Introduce the research method called an inventory - a procedure whereby a person can keep track of specific items for a purpose. Provide examples of who might do this, such as a grocery store clerk who must inventory supplies by writing down the items as they are unloaded from a delivery truck or a biologist who lists the type and number of birds that come to a bird-feeder. Ask students to suggest other examples of things that can be inventoried.
2. Ask students to think about what a recycling researcher might inventory. Encourage them to explain the purpose of their suggested responses. (A recycling researcher might inventory what is in the Blue Barrels of a particular neighborhood to see if the families are recycling correctly. Another inventory might be to see if items are being recycled that could have been reduced or reused first.) Lead students to realize that they can investigate the types and quantity of the recyclables in their own home. Ask students to recall some items

**Lesson 2: Blue Barrel Basics** *(continued)*

in their home refrigerator that might be recyclable or non-recyclable. Explain that limiting the inventory to the refrigerator is one way of controlling the size of the data for an inventory. Review the procedures for conducting a true research project, including the development of a question and hypothesis, data collection procedures, analysis and conclusion.

3. Tell students that this will be the assignment for homework – to take an inventory of everything inside their home refrigerator. Hand out the Student Worksheet: *Recyclables in the Refrigerator*. Read and discuss the directions so that all students understand the assignment. **Be sure that students understand how to record the “tally” in one column, and the total in the next column.** Remind students to take the Student Worksheet: *Roll Out the Blue Barrel* home to help them complete the investigation successfully. (They can also find this information on-line at [http://cms3.tucsonaz.gov/sites/default/files/esd/lwn\\_flyer\\_eng-span\\_web.pdf](http://cms3.tucsonaz.gov/sites/default/files/esd/lwn_flyer_eng-span_web.pdf).) Encourage students to complete the inventory with family members.
4. When students return with the assignment completed, have them present their findings by stating their own conclusions and explaining how their results support their conclusions. Include a discussion of how students can reduce and reuse items so that even less trash needs to be recycled or thrown away.
5. Conclude the discussion by asking students to share their own impressions about reducing, reusing or recycling more. You may also wish to have students review the Student Worksheet: *Roll Out the Blue Barrel* from Part I and discuss and indicate which items they actually do (or will) recycle at home.

**Extension Ideas:**

- Have students create a bar or pie graph using their inventory data and use their graphs to support their conclusions.
- Select common data from the students' investigations for comparison, such as the number of recyclable plastic items or the number/types of non-recyclable items in their home refrigerators. Create a table of this data on the board or to display using a Smartboard or overhead projector. Have students develop a graph of the data. Analyze the results as part of a class discussion or additional assignment.
- Learn more about recycling and Materials Recovery Facilities (MRFs) at [www.recommunity.com](http://www.recommunity.com).
- Learn more about recycling and waste management in Tucson by visiting the *Do More Blue* website at [www.domoreblue.com](http://www.domoreblue.com).

# Look What's **New** With Do More Blue



No more numbers or guessing. If it's plastic, recycle it.  
But please no plastic bags or Styrofoam.™



1. PLASTIC (PETE) BOTTLES



2. PLASTIC CONTAINERS



3. PLASTIC (HDPE) BOTTLES AND JUGS



4. CORRUGATED CARDBOARD  
5. BROWN PAPER BAGS  
6. NEWSPAPERS



7. PAPERBOARD  
8. MOLDED FIBERBOARD



9. MAGAZINES AND CATALOGS  
10. NOTEBOOKS AND PHONEBOOKS



12. ALUMINUM CANS  
13. STEEL / TIN CANS



14. RIGID PLASTICS



11. GLASS FOOD AND BEVERAGE BOTTLES AND JARS

15. MILK CARTONS AND DRINK BOXES



16. PRINTING AND WRITING PAPER  
17. MAIL AND COPY PAPER  
18. BROCHURES AND OTHER PAPER

**RECYCLE EVEN MORE PLASTICS! HAVE QUESTIONS? CALL THE RECYCLE INFOLINE TODAY AT 520-791-5000.**



CITY OF TUCSON  
ENVIRONMENTAL SERVICES  
WWW.TUCSONAZ.GOV/ESD

## Student Worksheet: Roll Out the Blue Barrel

**Name:** \_\_\_\_\_ **Class/Period** \_\_\_\_\_ **Date** \_\_\_\_\_

**Instructions:**

Complete the following table by answering these questions:

1. What is the original source material of the product (does it come from trees, petroleum, metal, or sand)?
2. Think of ways you can reduce your use of the product or reuse the product.
3. Decide if the product can be recycled in your Blue Barrel, if you can compost it, or if it needs to be thrown away in your trash can.

Original Source	Product	Reduce	Reuse	Recycle	Compost	Trash
	Notebook paper					
	Margarine tub					
	Corrugated cardboard box					
	Paper plate and cup					
	Phonebook					
	Cardboard egg carton					
	Milk and juice carton					
	Colored paper					
	Juice pouch					
	Juice box					
	Styrofoam egg carton					
	Paper bag					

**Student Worksheet: Roll Out the Blue Barrel** (continued)

Original Source	Product	Reduce	Reuse	Recycle	Compost	Trash
	Glass soda bottle					
	Plastic water bottle					
	Newspaper					
	Yard waste					
	Aluminum can					
	Packaging peanuts					
	Steel/tin can					
	Whipped cream can					
	Cereal box					
	Paper towel					
	Apple core					
	Paperboard (cereal box)					
	Old t-shirt in good condition					
	Glass applesauce jar					
	Magazine					
	Toilet paper tube					
	Berry container					
	Plastic soda bottle					

## Student Worksheet: Recyclables in the Refrigerator

**Name:** \_\_\_\_\_ **Class/Period** \_\_\_\_\_ **Date** \_\_\_\_\_

As a recycling researcher, you are to take an inventory of the container and packaging items in your home refrigerator to determine what is recyclable and what is non-recyclable. Do not count food items that are not in a container or do not have packaging.

**Procedure:**

1. Before you begin your inventory, write a question for your investigation. *(Example: Which type of recyclable is most common in my home refrigerator?)*  
\_\_\_\_\_
2. Write a hypothesis related to your question. *(Example: I think there will be more paper products than anything.)*  
\_\_\_\_\_
3. Complete an inventory of your home refrigerator. Record the data for each item in the data table below.

**Recyclables in the Refrigerator Tally Table**

Type of Material	Tally of Recyclable Items	Total Recyclable Items	Tally of Non-Recyclable Items	Total of Recyclable Items
Paper				
Cardboard				
Plastic containers				
Plastic bags				
Styrofoam				
Aluminum cans				
Aluminum foil				
Steel/tin cans				
Glass				
Other _____				
Other _____				

## ***Student Worksheet: Recyclables in the Refrigerator*** (continued)

4. After reviewing your data in the table in Question 3, write a conclusion.  
(Example: *My hypothesis was incorrect. There were mostly plastic items.*)

- 
5. List one specific example of each type of material in your refrigerator and describe a way to reduce and/or reuse it. An example is included below:

**Plastic container - margarine tub**

**Reduce - buy fewer large tubs instead of more small tubs**

**Reuse - clean tub and use to store leftovers**

6. If you have any non-recyclable items in your refrigerator, suggest alternatives to those items.

## Lesson 3: Using Recycled Materials Researching Recyclables

### At a Glance:

This lesson provides students the opportunity to follow the pathway of a recyclable material from the recycling stage through its production and marketing as a re-manufactured product. Using a set of guiding questions, students work individually or in small teams to research and take notes on specific stages of the process. Students will present their findings to the class and will diagram how recycling their product can “close the loop” in the resource use cycle. (Internet access recommended.)

### Arizona Department of Education Academic Standards:

Please refer to the Arizona Department of Education Academic Standards section for the ADE standards addressed by this lesson.

### Learning Objectives:

Students will be able to:

- ☛ explain the importance of producing and purchasing products made from recyclables in order to “close the loop” in the resource use cycle.
- ☛ Research and describe the steps used in creating a product of their choice from a specific recyclable material.

### Materials:

- ☐ Display Sheet: *Closing the Loop* – use a Smart Board or overhead projector
- ☐ Display Sheet: *Environmental Benefits of Recycling* - use a Smart Board or overhead projector
- ☐ Student Worksheet: *Guided Questions for Researching Recyclables* – photocopy one per student
- ☐ Books and Internet for research on the recycling process
- ☐ Several items made from recycled materials (e.g., soda can, notebook paper, cereal box)

### Procedure:

#### Part One: Research Preparation

1. Begin the lesson by writing “Closing the Loop” on the chalkboard. Ask students what they think it means in terms of the waste management issues discussed in Lessons 1 and 2.
2. Present the Display Sheet: *Closing the Loop* using a Smart Board or overhead projector. “Closing the loop” means that there should be a continuous cycle for a product from production, to purchasing, to consumption, to recycling, to ultimately returning to production. Using “paper” as an example, describe the process of “closing the loop” using the Display Sheet diagram: The natural resource is trees. After the trees are cut down and made into paper, the paper is purchased, then consumed. When the paper is no longer needed, it can be thrown away, to end up in the landfill – a dead end. To make more paper, we would have to cut down more trees. BUT, if the paper is recycled, then it can be made

**Lesson 3: Researching Recyclables** *(continued)*

into new paper, and the loop is closed - the cycle can continue. Note that "closing the loop" saves natural resources and saves space in the landfill (as discussed in Lesson 1).

3. Next, display a few items that are made from recycled materials. Ask students to hypothesize which recyclable material was the main resource used to make the display item. Have them explain why they made the choice.
4. Ask students to name other potential benefits (in addition to saving natural resources and saving space in the landfill) for using recycled materials to manufacture another product instead of using raw materials. Answers may include:
  - Less energy is used.
  - Less pollution is created.
  - Less water is used.
  - It costs less.
5. Present the Display Sheet: *Environmental Benefits of Recycling*. As an example, review "paper" to show the additional benefits of "closing the loop" and making paper from recycled paper.
6. Explain that during the remainder of this lesson students will be conducting an online and/or literature research project focused on the manufacture of a product using a recyclable resource material. Hand out the Student Worksheet: *Guided Questions for Researching Recyclables* to be used for their research. Review these questions aloud with the class to be sure they understand what they will need to do.
7. Have students work independently or in pairs to research a product of their choice. They should gather information on the process of "closing the loop" for their chosen product including how the recyclable resource is collected, processed and re-manufactured into the new product, followed by how it is marketed/purchased. Cost and environmental benefits of the process should also be included. Students should be sure to cite all sources used in their research. After their research has been completed, students should draw a "Closing the Loop" diagram for their specific product.

Note: It may be difficult to find all of the information about some products. Some general websites to get started include:

- <http://www.epa.gov/osw/conserve/rrr/buyrecycled.htm>
- <http://www.epa.gov/epawaste/conserve/smm/wastewise/wrr/buyman.htm>
- <http://www.calrecycle.ca.gov/recyclestore/>
- <http://www.closestheoop.com/home.html>

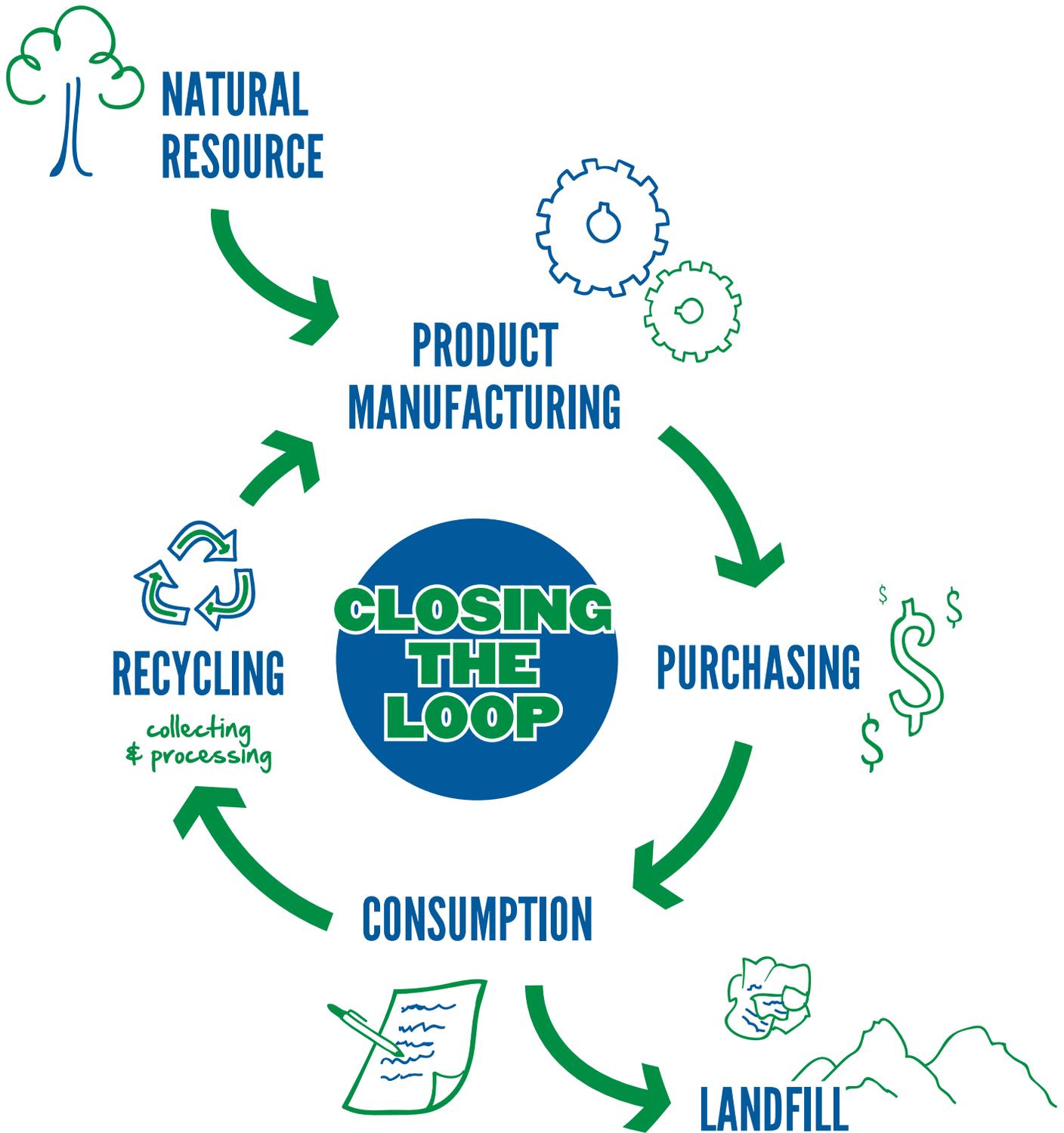
**Lesson 3: Researching Recyclables** *(continued)***Part Two: Presentation of Research**

1. Have students present their research findings to the rest of the class.
2. During the presentations you may choose to have the students in the audience take notes on specific aspects of each presentation.

**Extension Ideas:**

- Have students complete a written report about their recyclable's path to becoming a new product.
- Assign students to create a poster or PowerPoint presentation of their recyclable's path to becoming a new product.
- Have students look at packaging and labels of products at home and school to discover if they are using products made from recycled materials.
- Take the Recycling Geography Challenge at <http://www.eeexchange.org/wm/> to learn about where recyclable materials in Tucson go, and what these materials are turned into after recycling. (Note 1: It may take a few minutes for the website to load; Note 2: The specific information about where the recyclables are sent to may no longer be accurate now that Tucson has a new MRF, but the game is still beneficial because it shows students that many products can be recycled and are sent to a variety of locations around the world.)
- Discuss the differences between upcycling (converting waste materials into new materials or products of better quality) and downcycling (converting materials into new materials of lesser quality).
- Have students make their own upcycled products. Some ideas can be found at [http://toponlineengineeringdegree.com/?page\\_id=116](http://toponlineengineeringdegree.com/?page_id=116) and <http://www.upcyclemagazine.com/>.

### Display Sheet: Closing the Loop



# Environmental Benefits of Recycling

Material	Energy Savings with Recycled vs. Raw Material	Environmental Impact with Recycled vs. Raw Material	Natural Resource Savings with Recycled vs. Raw Material	Additional Information
<b>Aluminum</b>	95% energy savings; recycling of one aluminum can saves enough energy to run a TV for 3 hours	Reduces pollution by 95%	4 lbs. of bauxite saved, therefore, less mining, for every pound of aluminum recycled	Enough aluminum is thrown away to rebuild our commercial air fleet 4 times every year
<b>Glass</b>	50% energy savings; recycling of one glass container saves enough energy to light a 100-watt bulb for 4 hours	20% less air pollution; 50% less water pollution	1 ton of glass made from 50% recycled materials saves 250 lbs. of mining waste	Glass can be reused an infinite number of times; over 41 billion glass containers are made each year
<b>Paper</b>	60% energy savings	95% less air pollution; each ton prevents 60 lbs. of air pollution	Recycling of each ton of paper saves 17 trees and 7000 gallons of water	Every year enough paper is thrown away to make a 12' wall from New York to California
<b>Plastic</b>	Producing new plastic from recycled material uses 2/3 of the energy for making them from raw materials	Recycling a ton of plastic saves about as much energy as is stored in 197 gallons of gasoline	If we recycled every plastic bottle we used, we would keep 2 billion tons of plastic out of landfills	We use enough plastic wrap to wrap all of Texas every year
<b>Steel</b>	74% energy savings; every pound of steel being recycled saves enough energy to light a 60-watt bulb for 24 hours	Every year we create 11.5 million tons of ferrous wastes	One ton of recycled steel saves 2,500 lbs. of ore, 1000 lbs. of coal, and 40 lbs. of limestone	Enough iron & steel is discarded in the US to continually supply the nation's automakers

## *Student Worksheet: Guided Questions for Researching Recyclables*

**Name:** \_\_\_\_\_ **Class/Period** \_\_\_\_\_ **Date** \_\_\_\_\_

Product \_\_\_\_\_

Natural resources used to make the original product \_\_\_\_\_

---

### **Part 1. Research**

Refer to the following questions to help guide your research on your chosen recyclable product. Be sure to record your sources in the Works Cited section below. Attach additional paper as needed.

#### **A. Collection of Recyclable Product:**

1. How is this product typically disposed of/recycled?

2. After being sorted at the local MRF, where does your product's material go to be processed for remanufacturing?

#### **B. Recycling Process:**

3. What are the steps involved in recycling the old product into the new product?

4. What are some specific products made using the materials from your old product?

## *Student Worksheet: Guided Questions for Researching Recyclables (continued)*

5. What are the benefits of using recyclable material to make the new product?

### **C. Marketing/Purchasing:**

6. Where is the recycled product usually sold?

7. Who might buy this recycled product?

8. How does the price of the recycled product compare with the price of the same product made from non-recycled materials (original natural resources)?

## ***Student Worksheet: Guided Questions for Researching Recyclables*** *(continued)*

### **Part 2. Diagram**

Draw a “Closing the Loop” diagram for your product. (Determine how you will show it to the class during your presentation – draw on the chalkboard, make a poster, use a Smart Board, or use an overhead projector.)

### **Part 3. Works Cited**

Cite the sources used in your research. Attach additional paper as needed.

## **Lesson 4: Taking Action**

### **Look What's New With Do More Blue Poster Contest**

#### **At a Glance:**

In this lesson, students discuss what they have learned about solid waste management and source reduction in the City of Tucson, and how can they make a difference in their everyday lives. They consider ways to share their knowledge to inspire others to take action as well. Students then create posters to inform the Tucson community about the importance of recycling and submit their posters to the *Look What's New With Do More Blue* Poster Contest sponsored by City of Tucson Environmental Services.

#### **Arizona Department of Education Academic Standards:**

Please refer to the Arizona Department of Education Academic Standards section for the ADE standards addressed by this lesson.

#### **Learning Objectives:**

Students will be able to:

- ☛ describe how they can take action and make a difference in reducing solid waste in the City of Tucson.
- ☛ submit a poster highlighting the importance of recycling in the City of Tucson to the *Look What's New With Do More Blue* Poster Contest.

#### **Materials:**

- ☐ *Look What's New With Do More Blue* Poster Contest Rules – photocopy one per student
- ☐ *Look What's New With Do More Blue* Poster Contest Entry Form – photocopy one per student
- ☐ *Look What's New With Do More Blue* Poster Contest Certificate of Participation – photocopy one per student
- ☐ *Look What's New With Do More Blue* Poster Contest Flyer – post in your classroom

#### **Procedure:**

1. Explain to students that after completing Lessons 1-3, they are now well-versed in the subject of solid waste management and source reduction in the City of Tucson. Ask students how they can use what they have learned in their everyday lives. Responses should include a variety of ways to reduce, reuse, recycle, and compost at home, school or in the community, such as:
  - In Tucson, we can recycle paper, cardboard, aluminum cans, steel/tin cans, glass jars and bottles, and plastic containers.
  - Recycling saves natural resources such as trees, oil, metal, and sand.
  - Recycling helps save landfill space.
  - All types of plastic containers can now be recycled in Tucson – no more worrying about the number in the recycling symbol or the shape of the container!
  - Bring your recyclables to a Neighborhood Recycling Center if a Blue Barrel is not available.

**Lesson 4: Taking Action** *(continued)*

- Plastic bags can be recycled at some neighborhood stores, but NOT in the Blue Barrel.
  - Bring your own reusable shopping bags when you go shopping.
  - Compost food scraps and yard trimmings.
2. Explain to students that their actions or behavior changes may seem simple or small, but when multiplied by many people, they can add up and really make a difference, not just in Tucson, but around the world. Ask students to think of ways they can share what they have learned with others, and instill in others the need to take action and change behavior. Responses may include sharing what they learned at school with family members at home, being in charge of recycling at home or school, helping families shop responsibly (e.g., by purchasing recyclable products, products that are made from recycled materials, or products that have less packaging; by using durable, reusable grocery bags instead of paper or plastic bags), and teaching younger students at school the importance of the 3Rs.
  3. Describe one or two real-life examples of student action, such as:
    - "Team Green" at Falmouth Middle School in Maine decreased school waste by 15% by collecting cafeteria food scraps to compost and use as fertilizer for the school garden. They have been so successful that they are considering selling compost as a fundraiser for additional projects and field trips.
    - The "YES" team (Young Environmental Specialists) at San Gabriel Christian School in California has sponsored a variety of recycling campaigns to collect used cell phones, ink cartridges, sneakers, and e-waste. Not only have they reduced their amount of waste and saved space in the landfill, but they also earned some money for their school.
    - Details and additional examples can be found at <http://www.epa.gov/osw/education/pdfs/svclearn.pdf>.
  4. Inform students about a new contest sponsored by City of Tucson Environmental Services, the *Look What's New With Do More Blue* Poster Contest. The objective of the contest is to create a poster that effectively and clearly highlights the importance of recycling in the City of Tucson. This contest is an opportunity for students to creatively express their understanding of recycling and waste reduction in our community and to spread that message to the residents of Tucson. Winners may have their artwork enlarged and displayed on a city collection truck, receive a prize made from recyclables, or share a pizza party with their class.
  5. Hand out the *Look What's New With Do More Blue* Poster Contest Rules and Entry Form. Review the handouts with students. (Note: Decide in advance if class-time will be allotted to work on this poster, or if the poster will be created as a homework assignment.)

**Lesson 4: Taking Action** (continued)

6. Complete a *Look What's New With Do More Blue* Poster Contest Certificate of Participation for each student submitting an entry to the contest.
7. Submit the posters by **February 1** as described on the Entry Form. (If you don't use this lesson until after February 1, you can still submit poster entries to be considered for the following year's contest.) Winners will be announced in April.

**Extension Ideas:**

- Make copies of the *Look What's New With Do More Blue* posters before submitting them to the contest (or scan the posters and save as files). Display the posters in your classroom, around school (library, cafeteria, hallways), on your class or school website, or in the school newsletter.
- Students can get involved in solid waste management and source reduction in a variety of ways. Get started using the following websites as inspiration:
  - ❑ There are many options at [www.epa.gov/osw/education/mad.htm](http://www.epa.gov/osw/education/mad.htm). Highlights include:
    - Make a Difference Day: <http://www.epa.gov/osw/education/pdfs/mad-guide.pdf>
    - Science fair projects: <http://www.epa.gov/osw/education/pdfs/sciencefair.pdf>.
    - Service-learning projects: <http://www.epa.gov/osw/education/pdfs/svclearn.pdf>.
  - ❑ [www.epa.gov/osw/education/teens/steward.htm](http://www.epa.gov/osw/education/teens/steward.htm)
  - ❑ [www.dosomething.org](http://www.dosomething.org)

## Look What's New with Do More Blue Poster Contest Rules

### About the Contest:

City of Tucson Environmental Services is sponsoring the **Look What's New with Do More Blue** Poster Contest. Tucson students in grades 6-8 are invited to create a poster that effectively and clearly highlights the importance of recycling in the City of Tucson. This contest is an opportunity for students to creatively express their understanding of recycling and waste reduction in our community and to spread that message to the residents of Tucson. **In addition to winning some fun prizes, grand prize winners will have their artwork enlarged and displayed on the sides of Tucson's collection trucks!**

### Eligibility:

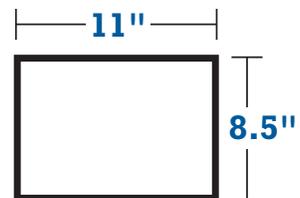
All 6th-8th grade students in City of Tucson public, private and charter schools (including home schooled students) are eligible.

### Theme:

**Look What's New with Do More Blue** posters should clearly highlight the importance of recycling in the City of Tucson. This theme can include topics such as "reduce, reuse, recycle," using the Blue Barrel, "Do More Blue," and materials accepted at the new Materials Recovery Facility (MRF). Use your imagination and get creative!

### Poster Requirements:

- ✓ Students must create their own **original** artwork - no copyrighted clip art, computer-generated graphics, or copyrighted characters.
- ✓ Posters must reflect the theme of the contest.
- ✓ All entries must be submitted on quality paper or poster board. (No lined notebook paper!)
- ✓ Drawings must be on a piece of paper that is 11 inches in width and 8.5 inches in height, so that the layout is in landscape format.
- ✓ All entries must be 2-dimensional; no glued on pieces will be accepted.
- ✓ Any medium (paint, crayon, marker, colored pencil, etc.) is acceptable, but remember that bright solid colors will reproduce better!
- ✓ Students may only submit one entry.
- ✓ Each poster must have an entry form firmly attached to the back of the poster.
- ✓ Do NOT fold poster when mailing or delivering.
- ✓ Posters are due by February 1. (Posters received after this date will be considered for the following year's contest.)



PAPER ORIENTATION

## ***Look What's New with Do More Blue*** **Poster Contest Rules** *(continued)*

- ✓ Entries must be mailed or delivered to:  
*Look What's New With Do More Blue* Poster Contest  
Environmental Education Exchange  
738 N. 5th Avenue, Suite 100  
Tucson, AZ 85705  
To deliver a poster, please call 670-1442 in advance.

### **Contest Reminders:**

- ✓ All entries will become the property of City of Tucson Environmental Services and will not be returned. Environmental Services reserves the right to reproduce the posters, use winners' names, schools, grade levels, and photographs in public announcements about the contest, and display winning posters on the sides of city collection trucks.
- ✓ Entries will be disqualified if the poster requirements are not met.

### **Judging:**

- ✓ Entries will be judged by a panel from the City of Tucson and local arts and environmental organizations.
- ✓ Winners may have their artwork enlarged and displayed on a city collection truck, receive a prize made from recyclables, or share a pizza party with their class.
- ✓ Winners will be announced in April.

### **Judging Criteria:**

1. Clear message communicated by the text and artwork.
2. The theme is addressed.
3. Creativity, originality, and artistic quality - no copyrighted artwork, characters or name brands
4. Visual clarity - is it easy to read?
5. Reproducibility – is it able to be copied easily?
6. Bright and colorful
7. Appropriate dimensions
8. Entry form is attached to the back of the poster.

City of Tucson Environmental Services

## Look What's New with Do More Blue Poster Contest Entry Form

- Please print or type information in the table below.
- All 6th-8th grade students in City of Tucson public, private and charter schools (including home schooled students) are eligible.
- All entries must be received by February 1.

Participant name .....

Participant address .....

Participant phone number .....

Participant email address .....

Participant grade level .....

Sponsoring teacher/subject .....

School name .....

Parent/guardian name .....

I hereby certify that this poster was created entirely by the student above and is the student's original artwork. I agree that it may be offered for public display or publication during or after the contest. I understand that this poster becomes the property of City of Tucson Environmental Services and may be reproduced for public display or publication. The original poster will not be returned. The student's name, school and grade level may be released along with photographs of the student and his/her artwork.

Student Signature \_\_\_\_\_ Date \_\_\_\_\_

Parent/Guardian Signature \_\_\_\_\_ Date \_\_\_\_\_

***This form must be securely attached to the back of the entry submitted.***

**Please mail or deliver completed poster and entry form to:**

*Look What's New With Do More Blue Poster Contest*

Environmental Education Exchange

738 N. 5th Avenue, Suite 100

Tucson, AZ 85705

*To deliver a poster, please call 670-1442 in advance.*

City of Tucson Environmental Services

is pleased to award this

# CERTIFICATE OF PARTICIPATION

to

---

For your contribution to the  
*Look What's New With Do More Blue* Poster  
Contest. We value your participation as well as your  
commitment to recycling and our environment.

---

Date





Do  
More  
Blue



CITY OF  
TUCSON

*Look What's New with Do More Blue*

# Poster Contest

## About the Contest:

City of Tucson Environmental Services is sponsoring the **Look What's New with Do More Blue** Poster Contest. Tucson students in grades 6-8 are invited to create a poster that effectively and clearly highlights the importance of recycling in the City of Tucson. This contest is an opportunity for students to creatively express their understanding of recycling and waste reduction in our community and to spread that message to the residents of Tucson. **In addition to winning some fun prizes, grand prize winners will have their artwork enlarged and displayed on the sides of Tucson's collection trucks!**

## Eligibility:

All 6th-8th grade students in City of Tucson public, private and charter schools (including home schooled students) are eligible.

## Theme:

**Look What's New with Do More Blue** posters should clearly highlight the importance of recycling in the City of Tucson. This theme can include topics such as "reduce, reuse, recycle," using the Blue Barrel, "Do More Blue," and materials accepted at the new Materials Recovery Facility (MRF). Use your imagination and get creative!



For more information, go to [www.outreach-scheduling.org/recyclingpostercontest](http://www.outreach-scheduling.org/recyclingpostercontest).

## Teacher Background Information

### A World of Waste

**W**hat is solid waste? Also referred to as trash, rubbish, refuse, or garbage, solid waste means waste material that is not liquid or gas. These lessons focus on municipal solid waste (MSW), which includes household, commercial and institutional waste, but not wastes from mining, agriculture, silviculture, demolition debris, and a variety of sludges. The term “waste” has interesting connotations. It can refer to something leftover or something not used wisely. Much that is considered waste could actually be used wisely.

Solid waste is a serious issue in the United States. The U.S. leads the world in the production of municipal solid waste. Even compared to other wealthy industrialized nations such as Japan or countries in Europe, we generate twice as much solid waste per capita. The average American produces about 4.5 pounds of garbage each day! In 1960, that figure was 2.6 pounds. Every year in the United States, we generate 250 million tons of garbage. That’s enough trash to cover the state of Arizona 5 times!

Recycling has been growing steadily for over 30 years. From 1980 to 1990, the U.S. almost doubled its recycling rate from 9 percent to 17 percent. In 1995, our country’s average recycling rate was over 25 percent, and by 2010, it was approximately 34 percent. At Tucson’s Los Reales landfill, more than 1,500 tons of garbage arrive every day, much of it recyclable. Tucson’s recycling rate has increased from 9% to 23%.

A new state of the art Materials Recovery Facility (MRF) opened in July 2012, allowing us to recycle a

wider variety of material than ever before – especially plastics. Now we can handle all seven types of recyclable plastics.

Recycling is much more than an alternate means of waste disposal. Recycling is about conserving natural resources, reducing our use of energy and materials, minimizing pollution, and more.

### What are the “Three Rs”?

**I**n a waste reduction context, the “Three Rs” refer to reduce, reuse, and recycle. These are the three most basic, important ways to reduce waste, conserve natural resources, and decrease our impacts on the natural world. Reducing, reusing, and recycling often save money, too.

It is important to recognize that the order cited— reduce, reuse, recycle—is not arbitrary. Some people tend to think of recycling as a central focus and of reducing and reusing as less important, but this is not a correct understanding. Reducing is actually the most efficient way to conserve resources. Reusing is second in efficiency. Recycling is important, but is not as efficient as reducing and reusing. Recycling of course involves a cycle. For recycling to be successful, we need to complete the cycle, or “close the loop,” by buying recycled goods.

Although confusing, it’s important to learn to distinguish between the “made from recycled” symbol, which is a trio of light chasing arrows on a dark circle background, from the “recyclable” symbol, which is a simple trio of chasing arrows, with no dark background. A “made from recycled” product is actually made from materials that have been used before.



## The Three Rs

### REDUCE

**To buy or use fewer items or to throw away less trash.**

- Prevent waste; buy only what you really need.
- Purchase products you use regularly in large packages.
- Purchase products in less packaging.
- Purchase concentrates and bulk goods.
- Buy products in refillable packaging.
- Borrow, loan, rent, lease, or share when possible (books, tools, etc.).
- Use both sides of paper.
- Take action to get your name deleted from mailing lists.
- Repair instead of replace something broken or worn.
- Buy good quality, durable products fabricated so that they can be repaired.
- Take good care of your things so that they last.



### REUSE

**To save something and use it over again for the same purpose or another purpose.**

- Choose reusable rather than disposable goods (napkins, mugs, razors, sponges, etc.).
- Purchase used goods (furniture, books, music, toys, clothes, etc.).
- Sell or give away goods you no longer want or need.
- Use the back of old paper as scratch paper.
- Use glass jars, plastic tubs, water bottles, lunch bags, etc. again and again.
- Use leftover materials to make something different (scrap lumber to build a bat house or doll house).

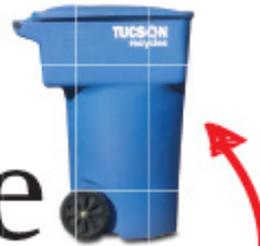
### RECYCLE

**To make something used into something new.**

- Recycle as much as possible through community collection programs, either curbside or at drop-off locations.
- Adjust your purchasing habits to buy items in packages that are recyclable in your area.
- Keep an eye out for special recycling programs, such as opportunities to recycle copier or computer printer cartridges through an office supply store and Christmas tree collection programs.
- Remember to buy recycled! Look for products and packaging with recycled content.
- Help "nature's recycling" by composting kitchen and yard waste.



# Look What's **New** With Do More Blue



No more numbers or guessing. If it's plastic, recycle it.  
But please no plastic bags or Styrofoam.



1. PLASTIC (PETE) BOTTLES



2. PLASTIC CONTAINERS



3. PLASTIC (HDPE) BOTTLES AND JUGS



4. CORRUGATED CARDBOARD  
5. BROWN PAPER BAGS  
6. NEWSPAPERS



7. PAPERBOARD  
8. MOLDED FIBERBOARD



9. MAGAZINES AND CATALOGS  
10. NOTEBOOKS AND PHONEBOOKS



12. ALUMINUM CANS  
13. STEEL / TIN CANS



14. RIGID PLASTICS



11. GLASS FOOD AND BEVERAGE BOTTLES AND JARS

15. MILK CARTONS AND DRINK BOXES



16. PRINTING AND WRITING PAPER  
17. MAIL AND COPY PAPER  
18. BROCHURES AND OTHER PAPER

**RECYCLE EVEN MORE PLASTICS! HAVE QUESTIONS?  
CALL THE RECYCLE INFOLINE TODAY AT 520-791-5000.**



CITY OF TUCSON  
ENVIRONMENTAL  
SERVICES  
WWW.TUCSONAZ.GOV/ESD

The success of the **Do More Blue** program depends on two factors:

- *Quality* of the recycled materials, and
- *Efficiency* of the collection.

It is the responsibility of each homeowner to follow these recommendations which allow for the best separation and eventual use of the recycled materials.

### Unacceptable Materials:

- Plastic bags
- Grass
- Yard waste
- Styrofoam
- Food waste
- Diapers
- Clothing
- Aluminum foil
- Hazardous waste

### Guidelines for Blue Barrel Recycling

- Please make sure materials are clean, empty and dry.
- Set out your Blue Barrel for collection when it is more than half full to decrease fuel consumption and air pollution.
- Have barrel at curb by 6 a.m. to ensure service.
- Leave labels on containers.
- Bottle and jar caps and lids can be recycled.
- Lightly rinse food containers. Use water wisely - throw very dirty items into the garbage.
- All recyclables go loose into the Blue Barrel, together - no sorting! Please put them in individually, not inside a box or bag.
- Do not flatten cans and bottles to ensure sorting equipment works properly.
- Cut or flatten corrugated cardboard boxes to fit in container. Remove plastic wrapping and liners.
- Shredded paper may be recycled in the Blue Barrel if it is secured in a clear plastic bag.

*(NOTE: This is the only time that plastic bags can go in the recycling container.)*



# Talking Trash in Tucson Vocabulary Words

**Blue Barrel:** The plastic container used for curbside recycling in the Do More Blue program.

**Closing the Loop:** To create a continuous cycle for a product from production, to purchasing, to consumption, to recycling, to ultimately returning to production.

**Compost:** The process of collecting organic waste, such as food scraps and yard trimmings, and storing it under conditions designed to help it decompose naturally. This resulting compost can then be used as a natural fertilizer.

**Decomposition:** Process by which a substance is broken down into component parts or basic elements under the proper conditions of light, air, and moisture.

**Do More Blue:** Part of City of Tucson Environmental Services' solid waste management program focusing on recycling. The *Do More Blue* program provides Blue Barrels for co-mingled, curbside recycling in the City of Tucson; in addition, large blue containers are available for recycling at businesses and Neighborhood Recycling Centers. For more information go to [www.domoreblue.com](http://www.domoreblue.com) or call (520) 791-5000.

**Downcycle:** To convert waste materials into new materials or products of lesser quality. For example, white notebook paper is often downcycled into cardboard.

**Landfill:** A carefully designed structure built into the ground in which trash is isolated from the environment; a plastic liner is used to prevent groundwater pollution, and the trash is periodically covered with sand or similar material and compacted.

**Los Reales Landfill:** The landfill for the residents and businesses of Tucson and Pima County. Each day approximately 1,500 tons of solid waste is brought to the 350-acre landfill, located at 5300 E. Los Reales Road (between Swan and Craycroft Roads). For more information go to <http://cms3.tucsonaz.gov/es/content/los-reales-landfill>.

**Materials Recovery Facility:** A Materials Recovery Facility (MRF), pronounced "murf," is the facility where recyclable materials are taken to be separated, bundled, prepared and transported away to be made into new products.

**Natural resources:** Raw materials and energy from nature: land, water, sunshine, and minerals. Everything comes from natural resources.

# Talking Trash in Tucson Vocabulary Words

(continued)

**Neighborhood Recycling Center:** Even if you don't have a Blue Barrel, you can recycle at one of the Neighborhood Recycling Centers located throughout Tucson. Locations can be found at <http://cms3.tucsonaz.gov/es/neighborhood-recycling-centers>.

**Non-renewable natural resources:** Materials that are considered finite in amount, or exhaustible because of their scarcity, the great length of time required for their formation, or their rapid depletion. Examples include petroleum, coal, and copper.

**ReCommunity-Tucson:** The name of the new MRF for the City of Tucson (opened July 2012), located at 3780 E. Ajo Way (near the intersection with Alvernon Way). For more information go to <http://www.recommunity.com/>.

**Recycle:** The process of collecting, sorting, processing, and using already manufactured materials (such as paper, glass, plastic and metals) for remanufacturing of new products thus reducing the amount of new raw materials needed.

**Recycled material:** Material that has already been recycled and remanufactured into new products.

**Recyclable material:** Material that can be recycled and remanufactured into new products.

**Reduce:** The process of decreasing the amount of waste generated.

**Renewable natural resources:** Materials that can be renewed, restored, or regenerated by natural ecological cycles or sound management practices. Examples include plants, animals and sunlight.

**Reuse:** The process of using an object more than once in its same form for the same purpose or for different purposes to extend the life of the object.

**Single Stream Recycling:** Recyclables that are collected mixed together, rather than separate from one another. In Tucson, recyclables are placed together in the Blue Barrel, then sorted at the MRF.

**Solid waste:** More commonly known as trash or garbage; consists of everyday items we use and then throw away, such as product packaging, grass clippings, furniture, clothing, bottles, food scraps, newspapers, appliances, paint, and batteries.

# Talking Trash in Tucson Vocabulary Words

(continued)

**Solid waste management:** The collection, transport, processing or disposal, managing and monitoring of waste materials.

**Source or waste reduction:** The design, manufacture, purchase, or use of materials to reduce the amount or toxicity of materials before they enter the waste stream. Source reduction includes redesigning products or packaging, reusing products and packaging already manufactured, and lengthening the life of products to postpone disposal.

**Three Rs (3Rs):** Reduce, Reuse, Recycle

**Upcycle:** To convert waste materials into new materials or products of better quality. For example, foil juice pouches can be upcycled to make handbags and backpacks.

**Waste Stream:** The total flow of solid waste from homes, businesses, institutions, and manufacturing plants to final disposal.

## Arizona Department of Education Academic Standards

The *Too Good to Throw Away!* program for grades 3-5 addresses the following Academic Standards. (Complete versions of the Academic Standards are available at <http://www.azed.gov/standards-practices/>.)

<b>SCIENCE STANDARDS</b>	LESSON #1	LESSON #2	LESSON #3	LESSON #4
<b>SC06-S1C1-02, SC07-S1C1-01, SC08-S1C1-01</b> Formulate questions based on observations that lead to the development of a hypothesis.		✓		
<b>SC06-S3C2-01, SC07-S3C2-01, SC08-S3C2-01</b> Propose viable methods of responding to an identified need or problem.	✓	✓		✓
<b>SC06-S3C2-02, SC07-S3C2-02, SC08-S3C2-02</b> Compare possible solutions to best address an identified need or problem.	✓	✓		✓
<b>SOCIAL STUDIES STANDARDS</b>				
<b>SS06-S3C4-01</b> Describe ways an individual can contribute to a school or community.	✓	✓	✓	✓
<b>SS06-S4C5-02</b> Describe the intended and unintended consequences of human modification (e.g., irrigation, aqueducts, canals) on the environment.	✓			
<b>SS06-S4C5-03</b> Explain how changes in the natural environment (e.g., flooding of the Nile) can increase or diminish its capacity to support human activities.	✓			
<b>SS06-S5C1-01</b> Identify how limited resources and unlimited human wants cause people to choose some things and give up others.	✓			
<b>SS07-S4C5-03</b> Describe how humans modify environments (e.g., conservation, deforestation, dams) and adapt to the environment.	✓			
<b>SS07-S4C5-04</b> Describe the positive and negative outcomes of human modification on the environment.	✓			
<b>SS07-S4C5-07</b> Compare different points of view and research on environmental issues (e.g., land use, natural resources, wildlife, biomes).	✓	✓		
<b>SS07-S5C1-01</b> Identify how limited resources and unlimited human wants cause people to choose some things and give up others.	✓			

<b>SOCIAL STUDIES STANDARDS</b> CONT	LESSON #1	LESSON #2	LESSON #3	LESSON #4
<b>SS08-S4C5-03</b> Explain how changes in the natural environment can increase or diminish its capacity to support human activities.	✓			
<b>SS08-S4C5-03</b> Explain how technology positively and negatively affects the environment.			✓	
<b>SS08-S4C5-05</b> Analyze changing ideas and viewpoints on the best use of natural resources (e.g., value of oil, water use, forest management).	✓			
<b>SS08-S5C1-01</b> Explain how limited resources and unlimited human wants cause people to choose some things and give up others.	✓			
<b>SS08-S5C1-05</b> Describe the impact of the availability and distribution of natural resources on an economy.			✓	
<b>WRITING STANDARDS</b>				
<b>6.W.2, 7.W.2, 8.W.2</b> Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content.			✓	
<b>6.W.8</b> Gather relevant information from multiple print and digital sources; assess the credibility of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and providing basic bibliographic information for sources.			✓	
<b>7.W.8, 8.W.8</b> Gather relevant information from multiple print and digital sources, using search terms effectively; assess the credibility and accuracy of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and following a standard format for citation.			✓	
<b>8.W.2</b> Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content.			✓	

<b>WRITING STANDARDS FOR LITERACY IN HISTORY/SOCIAL STUDIES, SCIENCE, AND TECHNICAL SUBJECTS</b>	LESSON #1	LESSON #2	LESSON #3	LESSON #4
<p><b>6.WSLHST.8</b> Gather relevant information from multiple print and digital sources, using search terms effectively; assess the credibility and accuracy of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and following a standard format for citation.</p>			✓	
<p><b>7.WSLHST.8</b> Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the usefulness of each source in answering the research question; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and following a standard format for citation.</p>			✓	
<p><b>8.WSLHST.8</b> Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.</p>			✓	
<b>READING STANDARDS FOR INFORMATIONAL TEXT</b>				
<p><b>6.RI.7</b> Integrate information presented in different media or formats (e.g., visually, quantitatively) as well as in words to develop a coherent understanding of a topic or issue.</p>			✓	✓
<b>SPEAKING AND LISTENING STANDARDS</b>				
<p><b>6.SL.1, 7.SL.1, 8.SL.1</b> Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher- led) with diverse partners on <i>grade 6, 7 or 8 topics, texts, and issues</i>, building on others' ideas and expressing their own clearly.</p>	✓	✓	✓	✓
<p><b>6.SL.2</b> Interpret information presented in diverse media and formats (e.g., visually, quantitatively, orally) and explain how it contributes to a topic, text, or issue under study.</p>	✓	✓	✓	✓

<b>SPEAKING AND LISTENING STANDARDS CONT</b>	LESSON #1	LESSON #2	LESSON #3	LESSON #4
<p><b>6.SL.4</b> Present claims and findings, sequencing ideas logically and using pertinent descriptions, facts, and details to accentuate main ideas or themes; use appropriate eye contact, adequate volume, and clear pronunciation.</p>	✓	✓	✓	✓
<p><b>6.SL.5</b> Include multimedia components (e.g., graphics, images, music, sound) and visual displays in presentations to clarify information.</p>	✓	✓	✓	✓
<p><b>7.SL.2</b> Analyze the main ideas and supporting details presented in diverse media and formats (e.g., visually, quantitatively, orally) and explain how the ideas clarify a topic, text, or issue under study.</p>	✓	✓	✓	✓
<p><b>7.SL.4</b> Present claims and findings, emphasizing salient points in a focused, coherent manner with pertinent descriptions, facts, details, and examples; use appropriate eye contact, adequate volume, and clear pronunciation.</p>	✓	✓	✓	✓
<p><b>7.SL.5</b> Include multimedia components and visual displays in presentations to clarify claims and findings and emphasize salient points.</p>	✓	✓	✓	✓
<p><b>8.SL.2</b> Analyze the purpose of information presented in diverse media and formats (e.g., visually, quantitatively, orally) and evaluate the motives (e.g., social, commercial, political) behind its presentation.</p>	✓	✓	✓	✓
<p><b>8.SL.4</b> Present claims and findings, emphasizing salient points in a focused, coherent manner with relevant evidence, sound valid reasoning, and well-chosen details; use appropriate eye contact, adequate volume, and clear pronunciation.</p>	✓	✓	✓	✓
<p><b>8.SL.5</b> Present claims and findings, emphasizing salient points in a focused, coherent manner with relevant evidence, sound valid reasoning, and well-chosen details; use appropriate eye contact, adequate volume, and clear pronunciation.</p>	✓	✓	✓	✓

<b>VISUAL ARTS STANDARDS</b>	LESSON #1	LESSON #2	LESSON #3	LESSON #4
<b>VA6-8-S1C1</b> The student will develop, revise, and reflect on ideas for expression in his or her own artwork.				✓
<b>VA6-8-S1C2</b> The student will use materials, tools, and techniques in his or her own artwork.				✓
<b>VA6-8-S1C3</b> The student will use elements of art and principles of design in his or her own artwork.				✓
<b>VA6-8-S1C4</b> The student will express ideas to communicate meanings or purposes in artwork.				✓
<b>VA6-8-S1C5</b> The student will apply criteria to assess the quality of in-progress and finished artwork.				✓
<b>EDUCATIONAL TECHNOLOGY STANDARDS</b>				
<b>ET6-S3C2, ET7-S3C2, ET8-S3C2</b> Locate, organize, analyze, evaluate, synthesize and ethically use information from a variety of sources and media.			✓	
<b>ET6-S4C2, ET7-S4C2, ET8-S4C2</b> Plan and manage activities to develop solutions to answer a question or complete a project.			✓	

# Do More Blue



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