

## County Implementation Award Program (CIAP) Math and Science Lesson

<b>Unit Title:</b> Earth & Human Activity
<b>Lesson Title:</b> Trash Audit
<b>Author:</b> Adrienne Solorio
<b>Grade Level:</b> Kindergarten
<b>Time Frame:</b> two weeks (approximately 30 minutes daily)
<p><b>Targeted Standard(s):</b></p> <p><i>K-ESS3-3 Communicate solutions that will reduce the impact of humans on the land, water, air, and/or other living things in the environment.</i></p> <p><i>K.CC4-A When counting objects, say the number names in the standard order, pairing each object with one and only one number name.</i></p> <p><i>K.CC.6 Identify whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group by using counting and matching strategies.</i></p>
<p><b>Short Description of Targeted Phenomenon:</b> Humans can make intentional choices that have either negative or positive impact on their environment.</p>
<p style="text-align: center;"><b>Three Dimensions of NGSS</b></p> <p><b>Science &amp; Engineering Practice/s (SEP):</b></p> <ul style="list-style-type: none"> <li>- Obtaining, evaluating, and communicating information</li> </ul> <p><i>Obtaining, evaluating, and communicating information in K–2 builds on prior experiences and uses observations and texts to communicate new information.</i></p> <ul style="list-style-type: none"> <li>● <i>Communicate solutions with others in oral and/or written forms using models and/or drawings that provide detail about scientific ideas.</i></li> </ul> <p><i>Students will compare data between landfill trash and recyclables. They will collect the data collectively as a class, compare the data to the previously taken data, evaluate if an improvement was made, then communicate their observations, as well as suggestions for improvement. (Analyzing and Interpreting Data)</i></p> <p><b>Crosscutting Concept/s (CCC):</b></p> <ul style="list-style-type: none"> <li>- <i>Cause &amp; effect: Events have causes that generate observable patterns.</i></li> </ul> <p><i>Students will evaluate the cause and effect of their intentional efforts. As a classroom, they will discuss the cause and effect of trash in their communities and extend this conversation to the impact on the Earth.</i></p>

**Disciplinary Core Idea/s (DCI):**

- *ESS3.C Human Impacts on Earth Systems Things that people do to live comfortably can affect the world around them. But they can make choices that reduce their impacts on the land, water, air, and other living things*
- *ETS1.B: Developing Possible Solutions: Designs can be conveyed through sketches, drawings, or physical models. These representations are useful in communicating ideas for a problem's solutions to other people.*

*Students will understand that humans can make choices that have positive or negative impact on the Earth.*

**Language Supports:** Students must understand the following terms: *reduce, reuse, recycle, landfill*

Students will be introduced to these terms through image, song, and book. Consider pointing out that the prefix “re” means “again”; comment, *“Your teacher might ask you to rewrite your name neatly, your dad might reheat your dinner if it gets cold, or you might want to rebuild a tower if it falls over.”*

**Materials Needed:** globe, chart paper, markers, latex gloves, trash, disposable table cloths to use as tarp for sorting, small whiteboard and marker, crayons & construction paper for posters, projector & computer to show students song/image/video/; optional book “Where Does the Garbage Grow”

**Objective(s): Students will be able to:**

1. Sort landfill trash from recyclables.
2. Understand and be able to describe why landfill trash is harmful to the Earth.
3. Generate possible solutions for reducing the amount of landfill trash they produce.
4. Use knowledge of the number sequence to count and compare amount of landfill trash compared to recyclables.

**How Math and Science concepts/skills/practices were integrated in this lesson:**

In this lesson, students will be asked to integrate mathematical skills such as counting (number sequence to 100), writing numbers, identifying numbers, and comparing numbers (less than 100). Students will learn that humans can make positive or negative choices that impact the Earth, and that there is a direct cause & effect link. Students can plan to make better choices and see the impact of those choices represented with data.

**Possible Challenges /Misconceptions:**

Students may have to be taught how to sort recyclables and landfill trash, but all students I completed this with had exposure from home and school lunch room.

Students may not have reusable containers at home to bring in snack & water, or parents/guardians engaged in supporting this intentional trash reduction. It is suggested to send home an email or letter to parents/guardians after the first day of data collection so that students have intentional adult support.

**Formative Assessment:** Show students the globe. Ask, “What is this called?” Tell students, “We live on the Earth and it is the only Earth we have. Ask students: “What can people do to help take care of the Earth?”

### Lesson Opening

#### Teacher Actions

Create a K-W-L chart. Ask students to share what they know about garbage and record relevant comments onto paper.

Read their comments to review.

Tell students that they are going to be learning more about garbage. Ask students what they are wondering, and record responses in K-W-L chart.

#### Student Actions

Students raise quiet hands and when called on, share what they know about trash (see my chart created with students in “Other Resources” section).

Students raise quiet hands and share what they are wondering about trash.

### Lesson Introduction

#### Teacher Actions

A. Read the book, “Where Does the Garbage Go?” If you do not have this book (it was in our school library), you might find similar book, or you can skip ahead to the landfill photo (C).

B. Ask students, “What have you learned about where our trash goes?” Record responses under L of the K-W-L chart.

C. Show students picture of a real landfill (see Other Resources) and explain that there are many landfills on Earth. Have students repeat the word *landfill*. Ask students, “What do you think about these landfills?”

#### Student Actions

A. Students actively listen to book.

B. Students summarize what they have learned about landfills.

C. Students raise quiet hands to share responses. Possible responses might be that they are gross, that they must stink, that they haven’t seen a landfill before etc.

D. Students watch video.

<p>D. Optional activity: show students Magic School Bus (season 3, episode 13) on recycling. Video is available in full on YouTube and DailyMotion or click <a href="#">here</a>.</p>	
<b>Body of Lesson</b>	
<b>Teacher Actions</b>	<b>Student Actions</b>
<p>A. Review K-W-L with class.</p> <p>B. Display photo of landfill (see Other Resources). Ask students: <i>What happens when we put something in the trash? Where does it go?</i> <i>What will happen if we keep needing to make more landfills?</i> <i>What can we do to reduce landfill trash?</i> Record responses on chart for reference. See brainstorm chart created with my class in the Other Teaching Resources section.</p> <p>C. Lay out tablecloth (or tarp) on floor. Have students sit around it. Give a student helper a whiteboard and marker to record numbers. Put on gloves and dump classroom trash onto tablecloth. Tell students that you are going to sort and count landfill trash and recycling trash. I suggest doing this activity at the same time in the day, maybe after snack, but not too late in the day when there is a greater volume of trash.</p>	<p>A. Students listen to comments made previously.</p> <p>B. Students actively listen to questions then respond.</p> <p>C. Students help tell if items are landfill trash or recycling.</p>

<p>Separate into two piles.</p> <p>A. Count landfill trash with 1:1 correspondence as a group, placing items back into trash. Have student helper record number of items.</p> <p>B. Count recycling trash items with 1:1 correspondence as a group, placing items into blue bin. Have student helper record number of items.</p> <p>C. Write numbers of landfill trash and recycling trash on the board. Ask students to read numbers. Ask students, “Which is more?”</p> <p>D. Review ideas &amp; chart about how to reduce landfill trash. Direct students to share, “What can we do differently tomorrow to make less landfill trash?”</p> <p>E. Record data in chart and tell students, “We will sort and count our trash again tomorrow to see if we can send less trash to the landfill.” Send home letter to parents and guardians explaining class lesson and goal.</p> <p>I. For the next few days (4-6), repeat C – F, and record data on chart. See our chart in Other Resources.</p>	<p>A. Students help count aloud.</p> <p>B. Students help count aloud.</p> <p>C. Students demonstrate number identification and compare two numbers.</p> <p>D. Students brainstorm ideas to create less landfill trash in class, such as recycling paper, using containers for snack/lunch, etc.</p> <p>I. Students observe that they can make a positive change by making different choices.</p>
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**Lesson Closure**

<b>Teacher Actions</b>	<b>Student Actions</b>
<p>A. Tell students that each group will work together to sort landfill trash and recycling, then count the number of objects in each group.</p> <p>B. Give groups prepared bags of trash/recycling items and direct them to sort into two piles (L for landfill and R for recycling).</p> <p>C. Direct students to count the number of items in each group and record the numbers using the number line as a reference.</p> <p>D. Ask students if there was more landfill trash or more recycling.</p>	<p>A. Students repeat plan.</p> <p>B. Students sort items into groups.</p> <p>C. Students count with 1:1 correspondence and write number to record number of items.</p> <p>D. Students share their findings.</p>

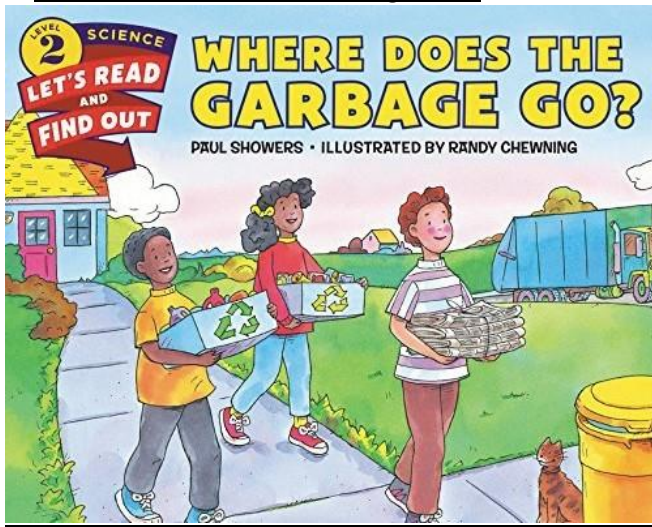
<p>A. Direct students to clean up. B. Ask students the following:</p> <p><i>Does trash ever go away? What would happen if we didn't recycle? What would happen if everyone recycled more? Is recycling one way we can take care of the Earth?</i></p>	<p>A. Students clean up their work spaces. B. Students respond and demonstrate that they understand that trash does not just disappear, that it is on Earth forever.</p>
<p><b>Summative Assessment:</b> Working independently or in pairs, direct students to design posters about a main idea they learned from the lesson. If needed prompt, <i>“Show me something you know about landfills.”</i>, or <i>“Show me something you know about recycling.”</i></p>	
<p><b>Lab Safety:</b> Minimize number of students who have contact with trash. Emphasize importance of using gloves to touch trash, removing gloves properly (turning inside out), and washing hands thoroughly afterwards.</p>	
<p><b>Extensions (if any):</b> Students can present their findings and posters to other classrooms or to a guest visitor (principal, secretary, librarian etc.), explaining why it is important to reduce landfill trash, and providing a list of ways to reduce trash produced.</p> <p>Teach students song about recycling from Other Resources.</p>	

Other Teaching Resources:

KWL created with my class

<u>K</u>	<u>W</u>	<u>L</u>
garbage doesn't belong in the street	· Why do people throw trash on the floor?	· Waste is trash and garbage together.
garbage goes in the trash	· Why does garbage stink? → food	· Waste used to go to the dump and ocean.
keep garbage out of oceans/lakes because it is dangerous to sea animals	· Why do we throw garbage away?	· Food + heat makes garbage stink.
it's good to clean up trash in your neighborhood	· Why does trash attract animals? → food	· Some cities have landfills → they can become parks
people get tickets for throwing trash on freeway		· Incinerators burn trash → becomes ashes and fumes
		· Cities have recycling programs

Book "Where Does the Garbage Go?"



Landfill Photo

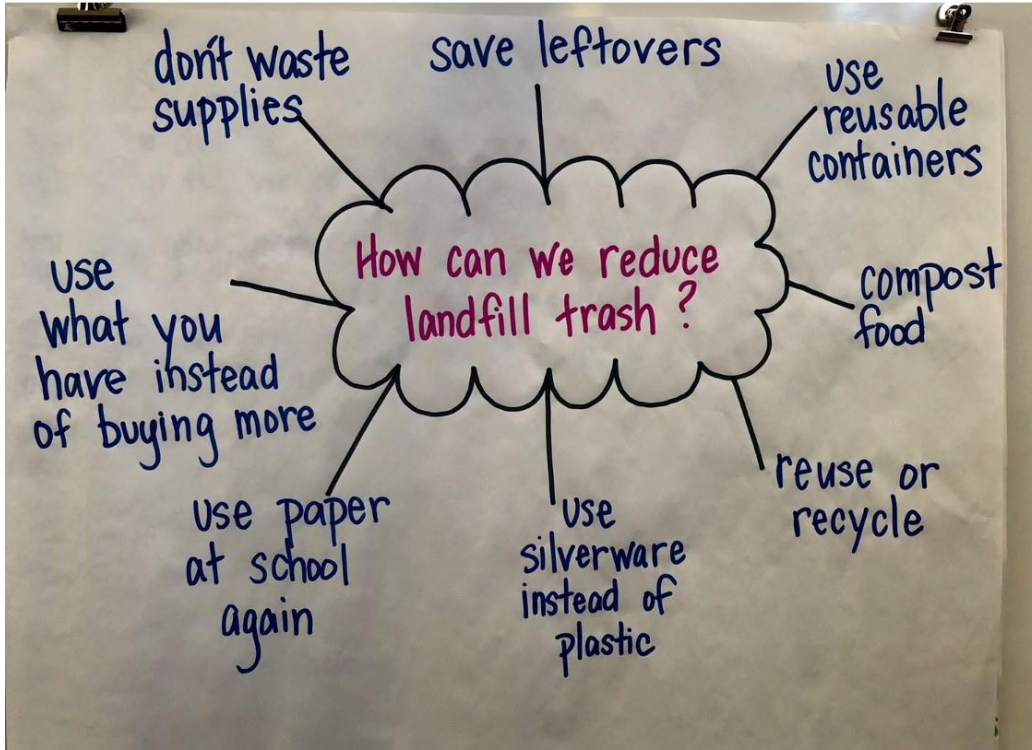




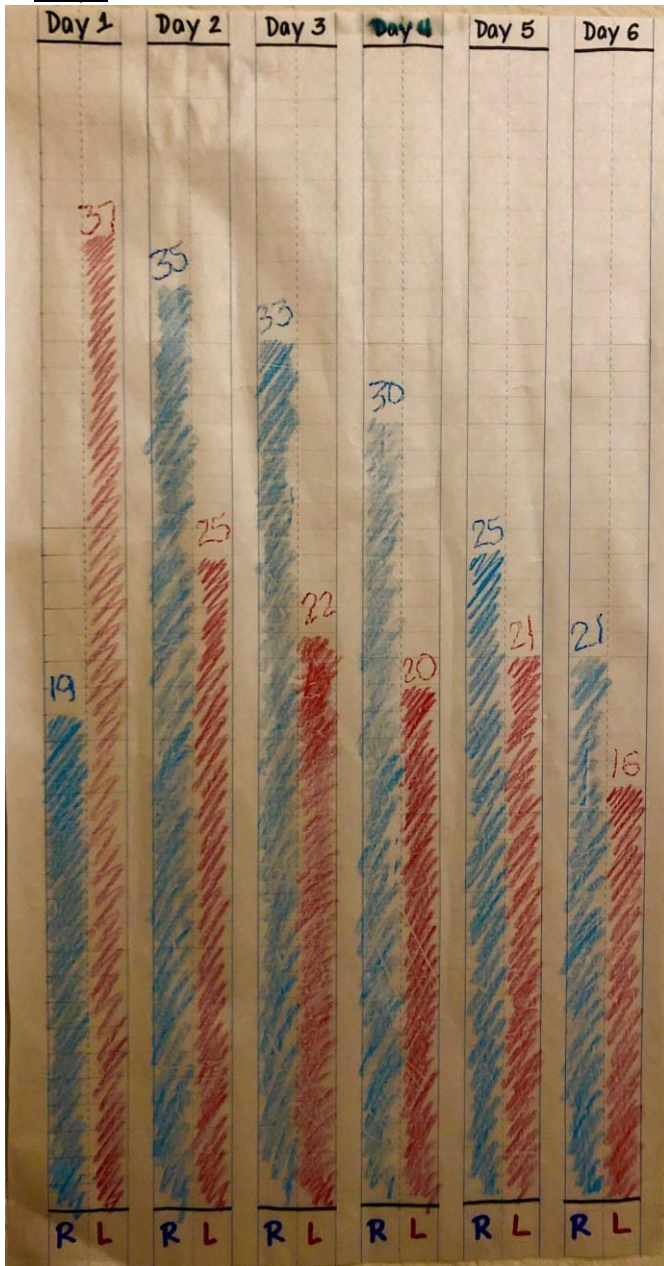
Magic School Bus link

<https://www.dailymotion.com/video/x5viv02>

Reduce Landfill Trash Brainstorm



Graph



Reduce, Reuse, Recycle Songs

<https://www.youtube.com/watch?v=1CvYayV88kY>



# "Reduce, Reuse, Recycle"

To the tune of "The More We Get Together"

Reduce, Reuse, Recycle  
Recycle, Recycle  
Reduce, Reuse, Recycle  
It's easy to do!  
Cause your trash  
And my trash  
Make up way  
Too much trash.  
Reduce, Reuse, Recycle  
It's easy to do!



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