Let's Rethink Waste!

Interactive Waste Game for the Classroom

Grades	Topics	Lesson Time
K - 5	Waste Sorting, Waste Reduction, Recycling	45 minutes

Objectives

- Students will learn about waste reduction and how to properly sort waste.
- Students will gain an understanding of how long commonly used items take to break down and the importance of reducing and recycling to minimize waste.

NGSS Alignment

Addresses the following Science and Engineering Practices (SEPs) within the Performance Expectations of NGSS for Grades: K-2, 3-5, 6-8, and 9-12:

- Defining a Problem
- Planning and Carrying out Investigations
- Analyzing and Interpreting Data
- Obtaining, Evaluating, and Communicating Information

Materials Needed

- Answer Key:"What bin does it go in?" (attached)
- Color cards for each student team representing trash, recycle, and organic waste (organics is optional, if applicable to your school)
- Pictures of waste items (attached)
- Waste timeline handout (attached)
- Flip chart paper or white-boards
- Writing utensils

Introduction

Our landfills are filling up at an alarming rate, often with resources that can be reused, composted, donated, recycled, or not even used in the first place. We are running out of space in our landfills, which stresses the importance of reducing the amount of waste we produce.

Background

Everything we buy and throw away including clothing, electronics, single-use plastics, and food has a large environmental cost. The manufacturing, distribution, and use of the goods and food we rely on most - as well as management of the resulting waste - all require energy, which mostly comes from fossil fuels. Waste from our global products eventually needs to be disposed of through recycling, incinerating, or landfills which all contribute to climate change. Making intentional and impactful decisions about what we buy, how we use it, and how we dispose of it can make a big difference in the amount of waste we produce and the greenhouse gasses associated with our consumption.

Part 1: “What Bin Does It Go In?”

Learning Objectives	Students will collaborate to decide how to sort waste items while learning which items can be recycled and/or thrown away. 
Instructions	1. Have students form teams or work together at their tables. Using the list of waste items, instruct teams to decide which bin each item goes in. Pass out color cards to each team and explain that Purple is for Recycling, Grey is for Landfill, and Green is for Organic waste (optional). 2. Hold up a picture of each item or call off the items from your list. Instruct the student teams to hold up the color of the bin where they would place the specific piece of waste. 3. Share correct answers from the answer key.
Reflection Questions	1. What was one thing you knew before this game about recycling? 2. What did you learn about the benefits of separating landfill, recycling, and organic waste (if applicable)?

Part 2: “How Long ‘Til It’s Gone?”

Background	Much of what we make, use, and discard lasts for a very long time. Items sent to a landfill will last even longer than those in a natural environment. This is because the dry and oxygen-poor conditions found in modern landfills cause organic matter to mummify rather than decompose. When left in a natural environment, many items will eventually decompose. Fossil fuel derived plastics will simply break down into smaller and smaller pieces known as microplastics, which will pollute our soil and waterways indefinitely. 
Learning Objectives	Students will collaborate to estimate how long waste items take to break down in a natural environment and gain an understanding of why recycling (and composting, if applicable) is important.
Instructions	1. Distribute the waste picture cards to each team of students. Instruct students to look at the pictures and discuss how long they think each item will last before they break down or decompose. 2. Ask students to then create a timeline by ordering items based on how long it will take to break down. Show waste timeline handout as a reference. 3. Lead a class discussion on the timelines they created. Share correct answers (see answer key).
Reflection Questions	1. What materials take the longest time to break down? What about the shortest time? 2. Why do some materials take longer to break down in comparison to others?

Part 3: Let's BRAINSTORM!

Learning Objectives	Students will gain a better understanding of how to create less waste by reducing and reusing. Students will think about how to apply what they've learned from this lesson into their lives. 
Instructions	1. Ask each team of students to brainstorm alternatives or reusable items that can replace single-use items. Encourage students to get creative with ideas and think of ways to repurpose items they already have. 2. Instruct students to write their ideas on flip chart paper or wipe boards to share with the class. 3. Have each group share key observations or interesting alternatives with the class.
Examples	Plastic Sandwich Baggie = reusable containers, reusable deli container, or reusable zip top bag like "Stashers" Plastic Water Bottle = reusable and refillable water bottle Plastic Utensils / Straw = bring utensils and reusable straw from home Disposable Coffee Cup = bring your own reusable coffee cup Plastic Shampoo Bottle / Hand Soap = Shampoo bar and bar of soap
Reflection Questions	Have students think and respond to the following reflection questions.
Suggested Questions	1. What changes in your daily life can you implement to reduce your waste or divert waste away from landfills? 2. What was the most interesting or surprising fact that you learned from this lesson? 3. What would you say to educate a friend or family member about reducing waste?

Let's Rethink Waste Wrap-Up Form

While your students are playing the games, take a few photos of students working together to share with Grades of Green. We'd love to see your class in action!

Once you have finished the lesson and waste game, complete the Waste Game Wrap-Up Form and upload your pictures. Upon completion of activity and wrap-up you will be eligible for a Teacher's Stipend!

Scan the QR code to access the Waste Game Wrap-Up Form.
Enjoy your lesson? Find your next activity here: www.gradesofgreen.org/welcome-to-launch

Answer Keys

"What Bin Does It Go In?" Waste Items	
Item	**Recycle / Landfill / Compost**
Clean Paper	Recycle
Aluminum can	Recycle
Glass bottle	Recycle
Paper bag	Recycle
Styrofoam cup	Landfill
Plastic utensil	Landfill
Paper with crayons or paint	Landfill
Napkins	Compost
Paper boat tray with food	Landfill
Plastic wrap	Landfill
Laminated paper	Landfill
Magazine	Recycle
Banana peels	Compost
Clean paper plate	Recycle
Used tissue	Compost
Plastic water bottle	Recycle
Paper coffee cup	Landfill
Printer Cartridge	Recycle (Special)*
*Some items can be recycled through retailers or mail-in services. Check with your school office.	

How Long 'Till It's Gone? Guess how long items take to break down! **Answer Key**		
Item	**Length of time to breakdown**	**Source**
Paper Towel	2 - 4 weeks	Stacker.com
Banana peel	3 - 4 weeks	ScienceLearn
Paper bag	2 - 5 months	ScienceLearn
Cotton rag	3 months	Her Circle
Cardboard lunchroom tray	1 year	Composting Hub
Cardboard box	1 year	Composting Hub
Wool sock	1 - 5 years	ScienceLearn
Milk carton	5 years	ScienceLearn
Cigarette butt	10 years	Longwood
Leather shoes	35 - 50 years	ScienceLearn
Plastic bag	10 - 100 years	Business Ethics
Tin can (soup or vegetable can)	50 - 100 years	ScienceLearn
Plastic Straw	200 years	WWF
Aluminum can (soda can)	200 - 500 years	Muncie Sanitary District
Disposable diaper	250 - 500 years	Stacker.com
Plastic water bottle	450 years	WWF
Plastic toothbrush	500 years	Statistica
Plastic fork	up to 1000 years	Plastic Pollution Coalition
Styrofoam cup	1000 - forever	ScienceLearn
Glass bottle	1 million years	ScienceLearn
Potato Chip bag	forever	ScienceLearn