



oGrade: 5
 Course Name: DC Recycles!
 Unit: Reduce, Reuse, Recycle

Overview and Goal of the Lesson:

- By the end of this activity, participants will:
- Understand how household/school waste breaks down in a landfill
 - Recognize the impact of waste on the environment
 - Be informed and empowered on ways to reduce, reuse and recycle

Essential Question(s):

- How can we reduce our impact on the environment and protect its inhabitants?
- What people throw away? What do you throw away?
- Can pollution come from the trash that you throw away?
- What can pollution affect?

NGSS Emphasized and Addressed in this Lesson Sequence:

Performance Expectations	Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts
Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact (5-ESS2-1)	Develop a model using an example to describe a scientific principle. (5-ESS2-1) Obtain and combine information from books and/or other reliable media to explain phenomena or	ESS2.A - Earth Materials and Systems ESS2.C - The Roles of Water in Earth's Surface Processes ESS3.C - Human Impacts on Earth Systems	A system can be described in terms of its components and their interactions. (5-ESS2-1),(5-ESS3-1) Science findings are limited to questions that can be answered with empirical evidence. (5-ESS3-1)

	solutions to a design problem. (5-ESS3-1)		
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Materials

Item	Quantity	Purpose
2-liter bottle	1 bottle per group	creating a miniature landfill
paper bags	1-2 bags per group	reduces amount of light landfill can intake
dirt (from a yard)	1-2 cups per group	layer dirt with garbage to create landfill
newspaper	1-2 piece per group	to cover the tables
spray bottle with water	1 per class	to keep soil lightly moist (daily)
pieces of trash (i.e. aluminum, lint, paper, orange peel, plastic bag, straw, etc.)	each member should bring in some small trash from hom	gain a better understanding of how household/school waste breaks down in a landfill
observation sheet/chart	1 sheet per group	record landfill observations (min. once/week)

5E Lesson Sequence

*** This project can take up to one month or more depending on the depth the teacher attempts to reach with his/her students, as students will have an opportunity to observe the effects of waste in landfills over time ***

Total Duration: 30-50 minutes (total project length = 1 month+ w/weekly observations)				
5E Model Stage	Duration	Teacher and Student Actions		Notes
Engage	10 minutes	What Teacher Does	<ul style="list-style-type: none"> Builds background knowledge and sets tone of investigation Discus local waste management and what happens to their own waste Show video - https://www.youtube.com/watch?v=mA608GJ-EzM 	<ul style="list-style-type: none"> Consumers can make a significant impact on the environment simply by the choices that they make at the store. Much of what we but becomes waste and thrown away ¼ of US waste comes from packaging Americans throw away an average of 230 million tons of garbage per year and about 2.5 million plastic bottles every hour Some waste gets recycled, but most ends up in landfills or the ocean explained that at your school you do compost the napkins and paper products in the cafeteria, and can
		What Students Do	<ul style="list-style-type: none"> Watch video Engage in discussion with teacher Think of questions they would like answered in regards to landfills 	

Commented [1]: ?

5E Model Stage	Duration	Teacher and Student Actions		Notes
Explore	20 minutes	What Teacher Does	<ul style="list-style-type: none"> Explain that they'll be creating miniature landfills using a few pieces of garbage and a 2-liter bottle 	explain that's because it goes off site
		What Students Do	<ul style="list-style-type: none"> Hypothesis what will happen to the trash that they have put into their landfill(s) and why Make and record observations about their landfills (min. once/week) 	
5E Model Stage	Duration	Teacher and Student Actions		Notes
Explain (can be used as an extension to the Engage)	10-15 minutes	What Teacher Does	<ul style="list-style-type: none"> Ask observation questions that are aligned/relate to the products in each group's landfill 	<ul style="list-style-type: none"> What changes can you make in order to keep items that don't break down out of landfills or ways to keep harmful items out of landfills? How can you reduce trash and pollution by making wiser purchases? Have students brainstorm different ideas
		What Students Do	<ul style="list-style-type: none"> Respond to teacher questioning with supportive reasoning/responses Evaluate and reevaluate hypothesis Continue to make observations of landfill 	
5E Model Stage	Duration	Teacher and Student Actions		Notes
Elaborate	10-15 minutes	What Teacher Does	<ul style="list-style-type: none"> Provide students the opportunity to reflect on their landfills 	

Commented [2]: hypothesize

			<ul style="list-style-type: none"> Probes students with questions to elicit thought and to <i>WHY</i> this is important, how it affects our everyday lives, etc. 	
		What Students Do	<ul style="list-style-type: none"> Think of what products are in their landfill and the effect that is has (How long it may take to break down?, etc.) Brainstorm ways in which they can help the school, community, and household be more conscious of the products that we use and throw away daily 	
5E Model Stage	Duration	Teacher and Student Actions		Notes
Evaluate	10 -15 minutes	What Teacher Does	<ul style="list-style-type: none"> Individually conference/meet with groups to discuss their findings and why Have students take apart their landfill to see how the items have changed 	<ul style="list-style-type: none"> Use/create rubric for evaluation purposes
		What Students Do	<ul style="list-style-type: none"> Record observations on chart (weekly and/or monthly) Create new landfills with products that they know will break down over time and monitor/record the differences between Landfill #1 & Landfill #2 	

5E Model Stage	Duration	Teacher and Student Actions		Notes
Extend	N/A	What Teacher Does	<ul style="list-style-type: none"> Have each student research a specific habitat or animal that has been/can be affected by waste pollution and share projects with class and/or school 	

			<ul style="list-style-type: none"> • Arrange a field trip with your class to waste management facility • Arrange service project to clean in and around the Anacostia River 	
		What Student Does	<ul style="list-style-type: none"> • DGS Reduce First Challenge Competitions and Challenges • Survey teachers or students within the school to find out if they reduce, reuse, or recycle and post results in a hallway • Create a public service announcement (poster, video, etc.) on why you should reduce, reuse, and recycle • Encourage school to reduce, reuse, and recycle (create school-wide recycling program) • Research a specific habitat or animal that has been/can be affected by waste pollution and share projects with class and/or school 	