Taking a Bite Out of Lunchroom Waste

Lesson 1: What is trash? Where does it go?

1A: What types of trash end up in our local spaces?

Anchoring Phenomena:

How can we **reduce** marine debris?

Investigative Questions:

What types of trash end up in our local spaces?

Lesson Goals:

What students will do: Students will complete a trash cleanup with a community partner and learn why the partner thinks reducing marine debris is important.

What students figure out: What type of trash ends in our local spaces?

NGSS alignments

Investigative questions	Grade Level Performance Expectations	Disciplinary Core Ideas	Science and Engineering Practices	Cross-cutting concepts
What types of trash end up in our local spaces?	**4-ESS3-1 Earth and Human Activity** - Obtain and combine information to describe that energy and fuels are derived from natural resources and their uses affect the environment. **HS-ESS3-2. Earth and Human Activity** - Evaluate competing design solutions for developing, managing, and utilizing energy and mineral resources based on cost-benefit ratios.	ESS3.A Natural resources	1- Asking questions (for science) and defining problems (for engineering) 3- Planning and carrying out investigations 8 - Obtaining, evaluating and communicating information.	1- Patterns 2 - Cause and effect 7 - Stability and change

Materials:

Journals, pictures of marine debris (digital or print out), trash cleanup data sheets, reusable gloves, trash bags or buckets

Optional: scale for weighing trash

Lesson Prep: Determine a cleanup location. Invite community partners to participate in the cleanup. Choose from the following databases/protocols to have students collect data about the trash that they find.

- NOAA Marine Debris Monitoring and Assessment Project (MDMAP): includes protocol documents and field data sheets and a database for entering your data once collected.
    - Guide for Educators
- Alliance for the Great Lakes Adopt-A-Beach: students use data sheets (Single or double sided) to collect trash data while in the field, then enter it into a database when they return to the classroom. This database requires that you create a profile/event to log your data.
- Great Lakes Great Responsibility: log a total count of your trash to go toward that #GreatLakes1Million Challenge, an effort to remove 1 million pieces of trash from the Great Lakes Basin.

Lesson Steps:

Invitation

1. Introduce the BIG idea to students: What is trash? Where does it go?
    a. Show students marine debris photo examples. Ask: What do you notice? What do you wonder?
2. *Middle School/High School Extension: Use "We Collected 300,000 pounds of plastic in 8 Months" (~8 minutes) video to launch the discussion about trash.*
    a. What do you think happened to the waterways in this video?
        i. It looks like it was contaminated by garbage, possibly chemicals
    b. Why did this happen?
        i. Greater access to disposable items (single use)
        ii. Lack of proper waste management infrastructure
    c. What is the community doing to address the problem?
        i. Every Friday cleanup which spread by word of mouth and gained participants
        ii. They are testing barriers and have 50 barriers in rivers and have the goal of 100 barriers to prevent trash from flowing into the ocean.
        iii. The trash is collected daily, sorted and UPC are scanned to track the trash to producers.
3. Before or after your cleanup, have students use their journals to start reflecting. Use this printable journal or follow the directions below.

a. Have students split one journal page in half by drawing a horizontal line.
b. On the top half, students will write “Why is understanding trash important?” and spend a few minutes writing about the question.
c. On the bottom half, students will write “What do you think about trash?” Let students know they will fill in the bottom half at the end of this lesson.
d. *MS/HS journal reflection: Could what happened to the river in the video happen today in the USA? Why or why not?*

4. *Middle School/High School Extension - Brainstorm a list of potential community partners*
    a. *Have students explain their goal of reducing marine debris and invite community partners to join them on their journey this year. Depending on the partner, expectations could be:*
        i. *Participate in the community cleanup(s)*
        ii. *Join in the trash conversation*
        iii. *Be an audience that students can report their lunchroom audit results to*
        iv. *Join for presentation of feasibility studies to provide feedback*
5. Conduct a beach, schoolyard or community trash cleanup with students.
    a. Invite your community partner(s) to participate in the cleanup alongside your students
    b. Review the safety guidelines and datasheets from the Alliance for the Great Lakes Adopt-a-Beach program or a marine debris collection protocol of your choice.
    c. Arrange students into small groups (3-5 students) with different roles:
        i. Recorder: keeps track of the trash placed in the trash bag/bucket
        ii. Hauler: carries the trash bag or reusable buckets (they can also pick up trash!)
        iii. Picker Uppers: the remaining students pick up trash, report what they found to the recorder, then place it in the trash bag/bucket.
    d. Weigh each group's trash bag/bucket. Record the weight on their data sheet. Optional: sort any recyclable materials, weigh them, then recycle.
    e. Discuss the amount of trash collected. What was the most common item cleaned up? Why?
    f. Allow the community partner to thank the students and share briefly how important it is to pick up trash and keep trash out of the water.
    g. *Extension: Use the soil sieve to look for microplastics in the **dry** sand along a shoreline.*
6. Record and report pounds of trash collected using the NOAA Marine Debris Monitoring and Assessment Project, Alliance for the Great Lakes, or Great Lakes Great Responsibility’s websites. If possible, have students input the data.
7. Post cleanup discussion with students.
    a. Share the final piece and pound cleanup counts with students and have students use their journals to respond to the following:
        i. What surprised you?
        ii. How do you think the trash got there (where you cleaned)?
        iii. What could be the effect of this litter on wildlife?
    b. Ask students to find a partner and share their journal responses. Allow time for students to add thoughts to their journal responses.

💧 Great Lakes Literacy Principles Connections:

(1) The Great Lakes, bodies of fresh water with many features, are connected to each other and to the world ocean.

(5) The Great Lakes support a broad diversity of life and ecosystems.

(6) The Great Lakes and humans in their watersheds are inextricably interconnected;

(8) The Great Lakes are socially, economically, and environmentally significant to the region, the nation and the planet.