Teacher Guide

Marine Debris Interruptions: Students Seeking Solutions

Description

Students focus on one marine debris object commonly found on Oregon beaches, research its original purpose, user, and life cycle, and then propose targeted solutions to prevent that item from becoming marine debris.

What's the Story?

Have you ever found litter on the beach and wondered what it is and where it came from? In this project, students focus on one item of marine debris that is found on Oregon beaches and try to learn about the item's STORY. What was the item originally used for? How does it move through its life cycle of manufacture, transportation, use, and disposal? How did this item end up abandoned or discarded in the marine environment?

Once students know the object's story, they identify solutions that would prevent this particular type of marine debris from ending up on the beach and share their ideas with decision makers. The goal is to INTERRUPT the processes that led to the generation of this type of marine debris.

Lesson Structure

Marine Debris Interruptions (MDI) lessons are designed using the 5E lesson plan structure:

ENGAGE - Share evidence that a particular item is found on Oregon beaches. Solicit ideas about what it may be, what it was used for, and how might it have ended up on the beach. This 'hook' piques student interest in the topic.
EXPLORE – In this section, students analyze data about where and when this type of marine debris is found, discover what the material is made of, and learn about impact the debris may have on ecosystems. Students refine their ideas about the item's life story.
EXPLAIN – At this point, students learn from users and other industry experts about how the item was intended to be used, and how it moves through its life cycle from raw materials to the landfill. They identify points in the item's life cycle where it could have escaped into the environment to become marine debris.

ELABORATE – With their new understanding of the life cycle of the item and the needs of the users, students propose an engineering solution to prevent the escape of this specific item into the environment. Solutions can include but are not limited to: increasing awareness among users, proposing substitutions, making changes to handling processes, designing physical barriers to escape, and suggesting alternatives to needing the item in the first place.
EVALUATE – Students share their proposed solutions with users and decision-makers. Local industry members listen to student ideas, provide feedback, and when possible, adopt student proposals.

The MDI lessons are designed to be implemented over several class periods and involve learning from experts through videos and readings and/or through direct communication and experiences with local community partners. While an educator may not have time to implement every activity in the unit, it is important that they include activities from last two E's which are focused on having students develop solutions to address the marine debris issue.

Available Resources

Field Guide
Available on the searchable Oregon Sea Grant website's **Curriculum** page, this 2-page guide includes pictures and descriptions of eight items commonly found on Oregon beaches. Print the guide so students can look for these items during a beach cleanup. The guide intentionally does not identify the original use or source of these marine debris items, as that is something the students will need to determine for themselves as they work through their investigation. Items in the guide include:

- Yellow Rope
- Plastic Wads
- Balloons
- Plastic Bands
- Sand Toys
- Black Plastic Funnel
- Gray Tube
- Water Bottle

Full Lesson Plans
There are three full MDI lesson plans available on the OSG **Curriculum** page. Each lesson focuses on one of the first three items in the Field Guide:

- Yellow Rope on the Beach
- Plastic Wads on the Beach
- Balloons on the Beach

Support
For learning materials (videos, articles, datasets) useful for exploring the five remaining items in the Field Guide or other items of interest, or if you need help with MDI lesson implementation, email Cait Goodwin at cait.goodwin@oregonstate.edu.

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