

The creation of this curriculum has been funded in part through a N.O.A.A. Outreach and Education Grant

## Curriculum Summary

Washed Ashore Marine Debris Prevention  
Through Outreach and Education



## Curriculum Summary

With the purpose of impacting behavior change, Washed Ashore has created this curriculum in order to:

- Provide supporting educational resources to educators, volunteers, and staff at all Washed Ashore exhibit locations, available through our website, that focus on the idea that every action counts and offer tangible ways to change individual and community behaviors.
- Provide Integrated Arts Marine Debris Curriculum developed through the NOAA Outreach & Education grant free of charge to teachers.

## Curriculum topics include:

- The science of plastics; where it comes from, and where it goes.
- Practice and experience with the scientific method.
- The science of oceanography and ocean based transport.
- Lessons in waste reduction through resourcefulness in order to educate and influence preventative behavior change.
- Use of visual art elements and principles.
- Aesthetic scanning.
- Visual Art lessons and processes utilizing debris that connects directly with science, visual art, language arts and social studies core curriculums.
- Active collaborative problem solving through artistic mediums as a method for collective behavior change.
- Group science and art activities that illustrate “Every Action Counts”.
- Social Science and language art reflection to establish ecofriendly alternatives to plastic.



**This unit of “IAMDC” will utilize visual art, movement, and creative writing as powerful tools for learning and communication about marine debris and plastic pollution.**

The lessons are a mix of science and art focused activities. Through the art lessons, students will create two giant masks. One will be created using single use plastic materials and the other will be created using alternatives to those items. Core competencies in science, writing, visual arts and social studies will be linked to all lessons. The culminating event of this 12 lesson unit will be a visual and language art exhibit and/or performance which will engage and teach communities about plastic pollution in oceans and waterways.

## Curriculum Outline

### Lesson 1: Introduction

A general introduction to Washed Ashore and plastic pollution.

#### Key Concepts:

- Every ocean contains trash that came from land.
- Plastic pollution is harming ocean ecosystems.
- Plastic is used to make many items we use every day.
- Community art is created by many people making small parts of a larger work.



#### Activity:

In order to establish the key concepts, two PowerPoint presentations will be included with this lesson. These slide shows will show examples of marine debris and also of Washed Ashore sculptures. Whenever possible, actual examples of marine debris and sculpture work will be provided. The lesson will conclude with a brainstorm activity to look at the plastics used in everyday life.

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### Lesson 2: Color and Emotion

An introduction to using art as a language and creating art from unusual materials.

#### Key concepts:

- Artists use the language of the arts to communicate.
- Artists make conscious choices about their subject matter and how to work with their materials.
- Artists make choices to give expression and feeling to their work.



#### Activity:

Students will explore their current understanding of how color can be used to express feeling and emotion and will learn how visual artists use color. Next students will apply their knowledge to create a piece of art that expresses a particular emotion.

## Lesson 3: What is Plastic?

An introduction to man-made polymers, both why they were created and how they are used.

### Key Concepts:

- Plastics are polymers.
- The scientific method is a useful tool for conducting experiments.
- There are many different types of plastic.

### Activity:

Students will conduct an experiment to try and create a polymer of their own using the scientific method. They will also investigate the properties of various manmade polymers.



## Lesson 4: How Long Until It's Gone?

An exploration into how long man-made substances can last in the environment and how different materials break down.

### Key Concepts:

- Man-made items can last for many years longer than their useful life.
- Biodegradable materials, metals, and manmade polymers all break down in different ways.
- Because of the factors that cause materials to breakdown, they breakdown differently in different environments.

### Activity:

Students will explore biodegradation, photodegradation, and corrosion using a set of example materials. They will also consider how different environmental factors influence these processes



## Lesson 5: Roughing It

A continuation of the study of using art as a language, focused on texture.

### Key Concepts:

- Artists use the language of the arts to communicate.
- Artists make conscious choices about their subject matter and how to work with their materials.
- Artists make choices to give expression and feeling to their work.

### Activity:

Students will explore using texture as a means of communication and begin to work with the materials used in this curriculum.



## Lesson 6: Away is Not Away Anymore

An introduction to three of the most common destinations of our trash: the landfill, the recycling center, and the environment.

### Key Concepts:

- When we are finished using things, they don't just go away.
- Landfills are the main destination for trash in the United States.
- Recycling works differently for different materials.
- Unsecured items on land tend to travel to the ocean.

### Activity:

Students will use a series of videos to explore modern landfills, recycling, and plastic in the environment.



## Lesson 7: What Goes Around Comes Around

A team building game that explores the ways we are all connected through the waste stream.

### Key Concepts:

- We are part of a continual cycle in which we use goods and throw them away, often without considering where they go.
- The world is an open system connected through the waste stream.
- We can choose to take care of our trash and create less of it.

### Activity:

Students split into teams on opposite sides of a visual barrier in the classroom. Debris will be spread over each team's side of the barrier. Their goal will be to remove all the trash from their side, and they will win when there is no trash on the ground. Students will find that the only way that they can win is by taking care of their own trash rather than throwing it onto the other side. After the game, students will consider what it means to take care of our trash through reducing, reusing, and refusing.



## Lesson 8: Single Use Plastics

An introduction to single use plastics and the issues that they have created in the environment.

### Key Concepts:

- Single use plastics are only used once, or for a very limited amount of time.
- Plastics can last for many years in the environment.
- There are alternatives for single use plastics.

### Activity:

Students will create a class definition for single use plastics. Next, students will create T-shirt bags as an alternative to plastic bags and explore the environmental cost of different types of bags.



## Lesson 9: Resourcefulness in a Bottle

A continuation of the study of using art as a language, focused on creating lines through processing.

### Key Concepts:

- Artists use the language of the arts to communicate.
- Resourcefulness is creating something of value out of something seemingly worthless.
- Creativity is thinking in new ways about old ideas.

### Activity:

Students will learn how to process materials to create intentional lines in order to make the hair for both masks.



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## Lesson 10: Packaging, Then and Now

An investigation into how packaging has changed with the introduction of plastic and how it's affecting the environment.

### Key Concepts:

- Packaging is involved in many aspects of our lives.
- The majority of modern packaging is made of plastic.
- Modern packaging affects the environment differently than packaging materials that were used in the past.
- We have the ability to reduce the amount of packaging in our lives depending on the choices we make.

### Activity:

Students will explore the concept of packaging, both what it has been and what it is. Then they will consider how modern packaging is affecting the environment and what they can do about it.



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## Lesson 11: Divide and Conquer!

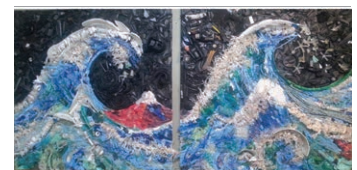
An introduction to using mosaic technique to create community art.

### Key Concepts:

- Mosaic technique has been used for centuries.
- Using mosaic technique enables artists to stretch limited resources.
- Everyone working together can make big things happen.

### Activity:

This lesson will begin with an introduction to the mosaic technique and then students will create the background (skin) of the plastic and earth masks.



## Lesson 12: Culmination

In this final lesson, the masks will be completed to use in creating a classroom conservation project.

### Key Concepts:

- Faces show emotion with shapes of eyebrows and mouths.
- The choices we make in the classroom affect what we add to the waste stream.
- Art can be a powerful language to communicate ideas



### Activity:

Students will decide on one habit that can be changed in the classroom to reduce plastic waste. Then they will focus on how to use the masks as a reminder for habit change. The mouths and eyebrows will be added after students decide on an appropriate expression for the masks.

### Presentation:

After creating the masks, take the opportunity to spread the message by sharing what you've learned. Post the faces in the hall and write out messages, put them on the stage and share their messages with the school, or use them to present what was learned to the larger community at a local event!

## Standards Correlation

**A.** Science Standards

**B.** Art Standards

**C.** Language Art Standards

**D.** Social Studies Standards

**A.** A scientific marine debris curriculum informed by the most accurate NOAA science and utilizes the Next Generation Science Standards augmented by the Essential Principles of Ocean Literacy Campaign, Principle 6: The Ocean and Humans are Inextricably Interconnected.

Specific Next Generation Science Standards addressed demonstrate how students, grades 5-8, who understand subject matter, can:

### 5-PS1-1.

**Develop a model to describe that matter is made of particles too small to be seen.** [Clarification Statement: Examples of evidence supporting a model could include adding air to expand a basketball, compressing air in a syringe, dissolving sugar in water, and evaporating salt water.] [Assessment Boundary: Assessment does not include the atomic-scale mechanism of evaporation and condensation or defining the unseen particles.]

### 5-LS2-1.

**Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.** [Clarification Statement: Emphasis is on the idea that matter that is not food (air, water, decomposed materials in soil) is changed by plants into matter that is food. Examples of systems could include organisms, ecosystems, and the Earth.] [Assessment Boundary: Assessment does not include molecular explanations.]

### 5-ESS3-1.

**Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.**

### MS-PS1-3.

**Gather and make sense of information to describe that synthetic materials come from natural resources and impact society.** [Clarification Statement: Emphasis is on natural resources that undergo a chemical process to form the synthetic material. Examples of new materials could include new medicine, foods, and alternative fuels.] [Assessment Boundary: Assessment is limited to qualitative information.]

### MS-LS2-1.

**Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem.** [Clarification Statement: Emphasis is on cause and effect relationships between resources and growth of individual organisms and the numbers of organisms in ecosystems during periods of abundant and scarce resources.]

### MS-ESS2-6.

**Develop and use a model to describe how unequal heating and rotation of the Earth cause patterns of atmospheric and oceanic circulation that determine regional climates.** [Clarification Statement: Emphasis is on how patterns vary by latitude, altitude, and geographic land distribution. Emphasis of atmospheric circulation is on the sunlight-driven latitudinal banding, the Coriolis effect, and resulting prevailing winds; emphasis of ocean circulation is on the transfer of heat by the global ocean convection cycle, which is constrained by the Coriolis effect and the outlines of continents. Examples of models can be diagrams, maps and globes, or digital representations.] [Assessment Boundary: Assessment does not include the dynamics of the Coriolis effect.]

### MS-ESS3-3.

**Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.\*** [Clarification Statement: Examples of the design process include examining human environmental impacts, assessing the kinds of solutions that are feasible, and designing and evaluating solutions that could reduce that impact. Examples of human impacts can include water usage (such as the withdrawal of water from streams and aquifers or the construction of dams and levees), land usage (such as urban development, agriculture, or the removal of wetlands), and pollution (such as of the air, water, or land).]

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## MS-ESS3-3.

**Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.\***

[Clarification Statement: Examples of the design process include examining human environmental impacts, assessing the kinds of solutions that are feasible, and designing and evaluating solutions that could reduce that impact. Examples of human impacts can include water usage (such as the withdrawal of water from streams and aquifers or the construction of dams and levees), land usage (such as urban development, agriculture, or the removal of wetlands), and pollution (such as of the air, water, or land).]

## MS-ESS3-4.

**Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth's systems.**

[Clarification Statement: Examples of evidence include grade-appropriate databases on human populations and the rates of consumption of food and natural resources (such as freshwater, mineral, and energy). Examples of impacts can include changes to the appearance, composition, and structure of Earth's systems as well as the rates at which they change. The consequences of increases in human populations and consumption of natural resources are described by science, but science does not make the decisions for the actions society takes.]

**B.** An arts marine debris curriculum that implements The National Core Arts Standards in order to provide a unified quality arts education for students.

### Creating:

**Conceiving and developing new artistic ideas and work.**

- Anchor Standard #1: Generate and conceptualize artistic ideas and work.
- Anchor Standard #2: Organize and develop artistic ideas and work.
- Anchor Standard #3: Refine and complete artistic work.

### Presenting

**(visual arts): Interpreting and sharing artistic work.**

Producing (media arts): Realizing and presenting artistic ideas and work.

- Anchor Standard #4: Analyze, interpret, and select artistic work for presentation.
- Anchor Standard #5: Develop and refine artistic work for presentation.
- Anchor Standard #6: Convey meaning through the presentation.

### Responding:

**Understanding and evaluating how the arts convey meaning.**

- Anchor Standard #7: Perceive and analyze artistic work.
- Anchor Standard #8: Interpret intent and meaning in artistic work.
- Anchor Standard #9: Apply criteria to evaluate artistic work.

### Connecting:

**Relating artistic ideas and work with personal meaning and external context.**

- Anchor Standard #10: Synthesize and relate knowledge and personal experiences to make art.
- Anchor Standard #11: Relate artistic ideas and works with societal, cultural and historical context to deepen understanding.

**C.** A language arts marine debris curriculum that implements the following Common Core Language Arts Standards:

• **CCSS.ELS-LITERACY.W.6.3:**

Write narratives to develop real or imagined experiences or events using effective technique, relevant descriptive details, and well-structured event sequences.

• **CCSS.ELA-LITERACY.W.6.5:**

With some guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach.

**D.** A social studies marine debris curriculum that implements the following National Curriculum Standards for Social Studies:

- **Thematic Standard #1) Culture:** Include experiences that provide for the study of culture and cultural diversity.
- **Thematic Standard #2) Time, Continuity, and Change:** Include experiences that provide for the study of the past and its legacy.
- **Thematic Standard #3) People, Places and Environments:** Include experiences that provide for the study of people places and environments.
- **Thematic Standard #7) Production, Distribution, and Consumption:** Include experiences that provide for the study of how people organize for the production, distribution and consumption of goods and services.
- **Thematic Standard #8) Science, Technology, and Society:** Include experiences that provide for the study of relationships among science, technology, and society.
- **Thematic Standard #9) Global Connections:** Include experiences that provide for the study of global connections and interdependence.
- **Thematic Standard #10) Civic Ideals and Practices:** Include experiences that provide for the study of the ideals, principles and practices of citizenship in a Democratic Republic.