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Save Our Sea Creatures One Plastic Bottle At a Time

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by Nicole Valente

Introduction

My students are always willing to lend a helping hand I want to teach my students about the importance of recycling and the effects recycling has on marine life. I want to give my students life-long lessons that they can use to make better choices in order to help preserve the health and habitats of sea animals. Giving students the information they need to make small changes in their lives that can make big differences. I want my students to know facts about recycling and the effects it has on the sea animals to encourage them to make better choices in order to help save and protect the sea animals.

Overview

In the Pacific Ocean there is a huge plastic waste dump that is twice the size of the United States. An estimate of 10 percent of the world's plastic waste will find its way into the sea and will end up in the Pacific Ocean. The sea currents will then transport the plastic waste into ocean dead zones, which are large areas of water that move slowly in circular patterns. The currents trap the plastic debris into one large constantly moving mass of plastic. As the currents slowly move in circular patterns the plastic is being broken down into plastic dust those sea animals then mistaken for food. The small fish will eat the tiny dust (plastic) thinking its plankton. Eventually the larger fish then eat the tiny fish, which consumed the tiny bits of plastic, and the contamination begins to move up the food chain affecting the sea animals of all sizes. Over 100 thousand marine animals will die from eating the plastic debris that has found its way into the ocean. Not all of the plastic is floating; it breaks down and eventually will sink to the seabed. As the tons of plastic debris floats and sinks to the bottom of the seabed it's smothering their habitat becoming a struggle to survive.

Learning Objectives

My unit will focus on how students can help the sea animals, which they all care about. As a class we will focus on researching the sea animals that live in the ocean and their purpose to the oceans environment. We will then research about recycling and the importance and the effects it has on the sea animals. Questions that students will reflect and discuss will be; What can they do to help save and protect the sea animals by recycling? What items that they use are plastic that can be recycled? How do they recycle and where to begin? What can they do to impact the oceans environment and save the habitats? My lessons will be aligned with the Connecticut Common Core Standards for reading, writing and science.

As a result, students will be able to write an expository writing piece on the importance of recycling to help protect the sea animals. With the information the students gained from the lesson they will be able to describe and explain what is recycling and how it impacts the oceans environment. They will show what they have learned through conversations, drawings and writing activities. Students will be able to brainstorm and write about facts that they have learned throughout the unit.

Research on Plastic

Types of Recyclable Plastics

The types of plastics that are recyclable are an important challenge for the plastic industry. The plastics have a high environmental resistance and can survive in the environment for a long time. The recycling of these post-consumer plastics is considered an important economic tool because energy and material can be re-used.

Polyethylene terephthalate

Recycling symbol of 1 is used to make carbonated drink bottles and fibres. Polyethylene terephthalate (PET) is linear thermoplastic polyester, which has a widespread commercial as a synthetic fiber, film and molding material. There are many ranges of PET that can be used because of its wide range of properties and its ability to control its crystallinity. PET can be recycled by almost all major recycling techniques but some problems may arise because of label adhesives can cause discoloration and lost of clarity. During the recycling process the residual moisture can lead to degradation. (1) Recycled into: Polar fleece, fiber, tote bags, furniture, carpet, paneling, straps, (occasionally) and new containers (2)

High and Low density polyethylene

With a recycling symbol of 2 is used to make bags and blow moulding. Low-density polyethylene with a recycling symbol of 4 is also used for bags and films. Polyethylene (PE) is a thermoplastic polymer and represents the largest constituent of plastic waste. PE exists in two main forms, high-density polyethylene (HDPE) and low-density polyethylene (LDPE). PE has a wide range of uses because of its low cost, high impact resistance, good process ability, excellent chemical resistance and electrical insulation properties. HDPE is

mostly recycled by granulation, producing flakes. The contaminants are removed by washing and then the flakes are separated from other plastic components. LDPE is recycled into pellet form with its main recyclable product being stretch film. (3) Recycled HDPE into: Laundry detergent bottles, oil bottles, pens, recycling containers, floor tile, drainage pipe, lumber, benches, doghouses, picnic tables, fencing. Recycled LDPE into: Trash can liners and cans, compost bins, shipping envelopes, paneling, lumber, landscaping ties, floor tile (4)

Polyvinyl chloride

With a recycling symbol of 3 is used for pipes and fittings. Polyvinyl chloride (PVC) is the third-most widely produced plastic. PVC is used in construction because it is more effective than traditional materials such as copper, iron or wood in pipe and profile applications. PVC waste can be managed in three different ways: recycling; disposal with energy recovery (incineration) and as a last resort landfill. (5) Recycled into: Decks, paneling, mud flaps, roadway gutters, flooring, cables, speed bumps, mats (6)

Polystyrene

With a recycling code of 6 is used for foam and protective packaging, containers lids, bottles, trays, tumblers, and disposable cutlery. Polystyrene can be rigid or foamed. General-purpose polystyrene is clear, hard and brittle. It is a very inexpensive resin per unit weight. Polystyrene is one of the most widely used plastics. Polystyrene usually can't be recycled locally and has to be transported to a centralized plant. (7) Recycled into: Insulation, light switch plates, egg cartons, vents, rulers, foam packing, carryout containers (8)

Polypropylene

With a recycling symbol of 5 is used for food packaging. It's found in some yogurt containers, syrup bottles, ketchup bottles, caps, straws and medicine bottles. Polypropylene (PP) has a high melting point and is often chosen for containers that hold hot liquid. (9) Recycled into: Signal lights, battery cables, brooms, brushes, auto battery cases, ice scrapers, landscape borders, bicycle racks, rakes, bins, trays (10)

Polycarbonate, Nylon 6 and Acrylonitrile butadiene-styrene

With a recycling code of 7. Is a wide variety of plastic resins that don't fit into the previous categories are put together into recycling code 7 under miscellaneous (11). Recycled into: Plastic lumber, custom-made products (12)

How Plastic Works

Plastics are made from oil. Oil is a carbon-rich raw material, and plastics are large carbon-containing compounds. They're large molecules called polymers, which are composed of repeating units of shorter carbon-containing compounds called monomers. Chemists combine various types of monomers in many different arrangements to make an almost infinite variety of plastics with different chemical properties. Most plastic is chemically inert and will not react chemically with other substances -- you can store alcohol, soap, water, acid or gasoline in a plastic container without dissolving the container itself. Plastic can be molded into an almost infinite variety of shapes, so you can find it in toys, cups, bottles, utensils, wiring, cars, even in bubble gum. Plastics have revolutionized the world. Because plastic doesn't react chemically with most other

substances, it doesn't decay. Therefore, plastic disposal poses a difficult and significant environmental problem. Plastic hangs around in the environment for centuries, so recycling is the best method of disposal. (13)

Steps in Making Plastic

Extrusion

The method of extrusion is one of the main processes in regards to the manufacturing of plastic. Extrusion refers to the process of forming a piece of plastic through the use of certain shaping devices. Heat may be used when forming plastics with this method. One of the most common techniques under this method is called single layer flat sheet extrusion. Manufacturing steps in this process are carried out as follows:

1) Resin is inserted into an extruder and melted.

2) The melted resin is then pumped into a flat sheet die to be sized.

3) Next, the sheet is transferred to cooling rolls.

4) These rolls determine final size, thickness, and width.

5) The flat sheets are wound into continuous rolls.

Molding

A second method used in making plastic involves the molding process. Under this process, a rubber substance is formed within molds by using pressure and heat to cure and form the shapes needed. One of the most common techniques used is injection molding. This method uses a molding machine to perform the production steps. These steps are as follows:

1) The molding machine melts the raw material into a hot liquid state.

2) The hot liquid is transferred to a mold.

3) The cooled mold enables the liquid to solidify.

4) The finished product is extracted from the mold.

Thermoforming

Plastic may also be made through the process of thermoforming. This steps used to make plastic using this method are:

1) Extrusion of a sheet

2) Placing this sheet into a mold

3) Using a heat source and a vacuum-able force to form the sheet into the respective mold (14)

Impact Plastic has on Sea Creatures

Everyday we use many things that make our life easier. Walking through the supermarket we can also find hundreds if not thousands of items to make our life and daily routine simpler. Individually wrapped food, plastic baggies for storage, unbreakable bottles, and disposable plastic items we use everyday like razors, shampoo bottles, and cups to name a few. To us humans, it is part of our lives to use such items, but to marine life it's a floating minefield. Using plastic isn't a bad thing, but what we do with it when we are done is the most important, a simple decision that can save the sea creatures. When the plastic reaches our waters, whether it be a plastic bag, drifting fishing nets, or just plastic debris poses a huge threat to the sea creatures that depend on the ocean for food. Like stated earlier in the introduction in the Pacific Ocean there is a huge plastic waste dump that is twice the size of the United States. An estimate of 10 percent of the world's plastic waste will find its way into the sea and will end up in the Pacific Ocean. The sea currents will then transport the plastic waste into ocean dead zones, which are large areas of water that move slowly in circular patterns. The currents trap the plastic debris into one large constantly moving mass of plastic. As the currents slowly move in circular patterns the plastic is being broken down into plastic dust those sea animals then mistaken for food. Plastic does not biodegrade; instead, it photo-degrades with sunlight, breaking down into smaller and smaller pieces, but they never really disappear. These plastic pieces are eaten by marine life, wash up on beaches, or break down into microscopic plastic dust. Over 100,000 marine mammals and one million seabirds die each year from ingesting or becoming entangled in plastic. Plastic can also remain on the surface and can remain there for hundreds of years. Plastic is very durable and strong which is what makes it so harmful if and when it reaches our oceans. The Center for Marine Conservation has divided their data into debris that they have found and 58% is of plastic and the twelve most frequently found are:

1. cigarette butts

2. paper pieces

3. plastic pieces

4. styrofoam

5. glass pieces

6. plastic for food bags

7. plastic caps and lids

8. metal beverage cans

9. plastic straws

10. glass beverage bottles

11. plastic beverage bottles

12. styrofoam cups(15)

Three Marine Zones

There are three marine zones in which sea creatures find their food. Scientists divided the bodies of water into three basic areas:

The surface zone

The very surface of the water where it meets the air and things float where you can see them.

The pelagic zone

The open water below the surface where neutrally buoyant fish swim and plankton float.

The benthic zone

What lies beneath the bottom of the water; consist of mud, sand, or rock. (16)

Many different forms of sea creatures will find their food in these three different zones. The surface zone animals such as birds will find most of their food on the surface. They will skim along above the oceans surface and scoop up small floating fish. The pelagic zone which is where many fish get their food source, these fish are pelagic feeders. These fish will swim about eating other fish and plankton. The benthic zone animals such as whales, turtles, and sea otters will swim along the bottom of the ocean floor and skim for food and there are labeled as benthic feeders. The sea creatures that swim in these three different zones of the ocean will come into contact with different forms of plastic. The bird that is skimming the oceans surface will accidentally eat small bits of floating plastic mistaken for food. PET is a high strength transparent plastic that is resistant to heat and will sink in water. HDPE is tough and chemical and moisture resistant and will float in the water. PVC is hardy, chemical resistant and transparent and will sink in water. LDPE is tough and lightweight. It's a barrier to moisture and floats in water. PP is hard, resistant to chemicals, transparent, and will float in water. PS is stiff, transparent, has a smooth surface and will sink in the water. EPS (expanded polystyrene recycling symbol 6) is lightweight, heat resistant and will float in the water. Polycarbonate, Nylon 6 and Acrylonitrile butadiene-styrene recycling symbol 7 or also known as other means the plastic is made up of resin other than the ones listed above. Depending on the characteristics will result in the items floating or sinking in the water. The many sea creatures that live in the ocean will come into contact with the discarded plastic that eventually ends up in their home. The plastic is not natural to their environment and because the sea creatures don't recognize it they will mistaken it for food, get entangled or cut and injured. In the research study titled *Plastic ingestion by planktivorous fishes in the North Pacific Central Gyre* by C.M. Boerger, G.L. Lattin, S.L. Moore, C.J. Moore found that there is a significant amount of marine debris that has accumulated in the North Pacific Central Gyre (NPCG). They documented the effects on larger marine organisms through cases of entanglement and ingestion. The documented the ingestion and quantify the amount of plastic found in the gut of common planktivorous fish in the NPCG. Each plastic was taken from the gut of the fish and was counted, weighed and categorized by type, size, class, and color. The results were approximately 35% of the fish examined has plastic pieces in their guts. A total of 1375 pieces of plastic, ranging from 1 to 83 pieces per fish and averaging 2.1 pieces per fish were collected from the guts. Qualitatively, ingested plastic consisted primarily of fragments:

- 94% film
- 3% fishing line

- 2% rope
- 1% styrofoam and rubber

The highest percent of color was:

- 58.2% white
- 16.7% clear
- 11.9% blue

The above percentages of color of the most commonly found plastic in the guts of the fish were similar to the color of the area's plankton, which is the primary food source for the fish. Plastics, both large and small pieces, are a complex problem in the marine environment. The types of plastic that the sea creatures eat and encounter will depend upon where they live and eat. As humans we can only see the plastic on the oceans surface, but they are many types on the ocean floor as well. We need to make an effort to not forget that this problem exist because we can's see the pollution. The sea creatures will continue to be affected unless we make careful choices of what we do with our plastic and how we dispose of it. (17)

Great Pacific Garbage Patch

The "garbage patch," is an area of marine debris concentration in the North Pacific Ocean. While litter items can be found in this area, along with other debris such as derelict fishing nets, much of the debris these days are small bits of floatable plastic debris. These plastic pieces are quite small and not immediately evident to the naked eye. Much of the debris found here are small bits of floating plastic not easily seen from a boat.

Locations of the Garbage Patches

Eastern Pacific garbage patch

Concentrations of marine debris have been noted in an area midway between Hawai'i and California within the North Pacific Subtropical High, an area between Hawaii and California.Due to limited marine debris samples collected in the Pacific it is still difficult to predict its exact content, size, and location. However, marine debris has been quantified in higher concentrations in the calm center of this high-pressure zone compared to areas outside this zone. It should be noted that the North Pacific Subtropical High is not a stationary area, but one that moves and changes. This area is defined by the NOAA National Weather Service as "a semi-permanent,

subtropical area of high pressure in the North Pacific Ocean. It is strongest in the Northern Hemispheric summer and is displaced towards the equator during the winter when the Aleutian Low becomes more dominant. Comparable systems are the Azores High and the Bermuda High." The High is not a stationary area, but one that rotates, moves, and changes.

Western Pacific garbage patch

There is a small "recirculation gyre" south of the Kuroshio current, off the coast of Japan that may concentrate floating marine debris; the so-called western garbage patch. The exact forces that cause this clockwise rotation are still being researched; however it may be caused by winds and ocean eddies (clockwise or counter-clockwise rotating waters). Research is ongoing by academia such as the University of Hawaii and Massachusetts Institute of Technology, to further understand the true nature of and forces behind these recirculation gyres.

North Pacific is the Subtropical Convergence Zone (STCZ)

The STCZ is located along the southern edge of an area known as the North Pacific Transition Zone. National Oceanic and Atmospheric Administration has focused on the STCZ because it is an area of high productivity, pelagic species feeding and migration, and documented marine debris concentration – and one of the reasons for marine debris accumulation in Hawaii.

*Differences between '*garbage patches*' and gyres*

A gyre is a large-scale circular feature made up of ocean currents that spiral around a central point, clockwise in the Northern Hemisphere and counterclockwise in the Southern Hemisphere.Worldwide, there are five major subtropical oceanic gyres: the North and South Pacific Subtropical Gyres, the North and South Atlantic Subtropical Gyres, and the Indian Ocean Subtropical Gyre. The North Pacific Subtropical Gyre is the one most notable because of its tendency to collect debris. It is made up of four large, clockwise-rotating currents – North Pacific, California, North Equatorial, and Kuroshio. While a gyre may aggregate debris on a very large scale, debris patches, are actually the result of various smaller-scale oceanographic features such as oceanic eddies and frontal meanders. As energy (wind/currents) hit the front there are undulations and "curvature" which are described as frontal meanders (18).

How does the plastic end up in the ocean

- Between 100 and 200 billion pounds of plastic is manufactured annually
- An estimated 10% of plastic ends up in the oceans every year
- About 20% comes from ships and platforms in the sea
- The remaining 80% comes from the land – garbage that travels through storm drains or watersheds and accumulates in streams, rivers, and bays. Eventually this plastic garbage finds its way to into the oceans. (19)

Plastic Free Life

Top 2 Ways to Reduce Plastic Waste

1. Carry reusable shopping bags.

2. Give up bottled water.

Not only does it come in a plastic bottle, but also tremendous resources are used to extract, bottle, and ship it. Get a reusable stainless steel bottle or stainless steel travel mug; fill it up with tap water before leaving the house. Plastic-Free Grocery Shopping (20)

Plastic-Free Grocery Shopping

3. Shop your local farmers market

4. Say no to plastic produce bags.

5. Buy from bulk bins as often as possible.

6. Cut out sodas, juices, and all other plastic-bottled beverages.

7. Buy fresh bread that comes in either paper bags or no bags.

8. Return containers for berries, cherry tomatoes, etc. to the farmer's market to be reused.

9. Bring your own container for meat and prepared foods

10. Choose milk in returnable glass bottles.

11. Buy large wheels of unwrapped cheese.

12. Try to choose only wine bottled in glass with natural cork stoppers.

13. Let go of frozen convenience foods.

14.Give up chewing gum.

Did you know almost all chewing gum is made from plastic? That's right. When you're chewing gum, you're chewing on plastic (21).

Plastic-Free Eating and Drinking on the Go

15. Carry your own containers for take out food and leftovers.

16. Carry a stainless steel travel mug or water bottle at all times for coffee and other drinks while out in the world.

17. Carry reusable utensils and glass drinking straws.

18. When ordering pizza, say no to the little plastic "table" in the middle of the pizza box.

19. Treat yourself to an ice cream cone.

Instead of keeping containers of ice cream in the freezer, go out and get ice cream in a cone. (22)

Plastic-Free Lunches at School or Work

20. Bring plate, bowl, glass, and utensils to keep at the office.

21. Carry lunches in reusable stainless containers or cloth bags.

22. Choose reusable cloth sandwich/snack bags.

Plastic-Free Food Storage & Kitchenware

23. Choose glass/stainless steel food storage containers, and reuse what you have.

24. Store foods without freezing.

25. Avoid non-stick cookware.

26. Choose astainless steel ice cube tray.

If your old plastic ice trays have worn out, consider replacing them with stainless steel.

27. Usestainless steel popsicle molds. (23)

Personal Care

41. Check labels of personal care products!

42. Use bar soap instead of liquid hand soap.

43. Give up shampoo in plastic bottles.

44. Baking soda is the best deodorant EVER.

45. Use soap instead of canned shave cream.

46. Choose lotions and lip balms in plastic-free containers.

47. Switch from a plastic razor to a second hand safety razor.

48. Use less plastic tooth paste/powder, toothbrush, and floss.

49.Choose toilet paper that's not wrapped in plastic.

50.Look into plastic-free sunscreen options.

51.Choose a plastic-free wooden hairbrush.(24)

Lesson Plans

Lesson One: What Is Plastic?

Objective: Students will identify and brainstorm 'What is Plastic'. Students will generate a list of items they use everyday that are plastic.

Common Core Standard: SL.K.4 Describe familiar people, places, things, and events and, with prompting and support, provide additional detail

On day one students and teacher will discuss various items that are plastic and generate a list of items. I will introduce and show samples of different types of plastics and what they are used for. I will explain and define the different usages of plastics. After the students brainstorm different forms of plastics and why they use them we will discuss the importance of them.

Examples of what I will bring in to show students for a visual:

1. Water Bottles
2. Plastic utensils
3. Plastic bowls and dishes
4. Toothbrushes
5. Laundry Detergent
6. Sandwich baggies
7. Plastic cups
8. Plastic Wrap

With the students, we will then sort where we find these plastics

Kitchen Items	Bathroom Items	Classroom Items	Other

Follow Up Questions:

1. What is plastic?
2. How is it different from glass, etc..?
3. Do we use more items that are plastic?
4. It what area did we think of the plastic?

Homework: Students will be asked to bring in items from home that is made from plastic.

Lesson Two: What Are Those Numbers?

Objective: Students will identify the recycling symbol on each plastic item and learn what those numbers mean. Teacher can refer to Types of Recyclable Plastics in research and make a kid friendly chart for a visual.

Common Core Standard: K.CC.3 Write numbers from 0-20

L.K.5a Sort common objects into categories to gain a sense of the concepts the categories represent.

The night before the students were asked to bring in items from home that were made up of plastic. Using both the samples the teacher brought in and the items from the students we will sort them according to their recycle number symbol located on the item.

I will introduce the recycling number codes and what the symbol looks like.

I will read: The Adventures of a Plastic Bottle by: Allison Inches to introduce what happens to the plastic bottles once we are done. By reading this story this will give students the knowledge they need to understand the purpose of recycling plastic and how to sort the plastic by the number code.

Teacher and students will fill in then uses of each item together.

Name	Code	Uses
PET,PETE	1	
HDPD	2	
PVC	3	
LDPE	4	
PP	5	
PS	6	
EPS	6	
Other	7	

Follow Up Questions:

1. What did we learn today?
2. What will you do different after todays lesson?
3. How will you recycle plastic now?

Lesson Three: Sorting Plastic

Objective: Students will use the plastic items they brought in from home that they use daily and sort the plastics by using the recycling symbol numbers. Students will identify and explain the type of plastic it is by using the chart created in Lesson 2.

Common Core Standard: K.MD.3 Classify objects and count the number of objects in each category. Classify objects into given categories; count the number of objects on each category and sort the categories by count.

Lesson 4: Repurpose Plastic

Objective: Students will use the plastic item they brought in from home and find/create a new purpose for that item. Students will watch a short video on how plastic water bottles were repurposed as a source of light.

Students will watch a video from you tube, http://www.youtube.com/watch?v=SBWi3NtND68

This video demonstrates how plastic water bottles have been repurposed as light sources for homes. It may be advanced for some students but it's an introduction and a way to start conversation and explore ideas with students on repurposing plastic items. Planet Earth: 25 Environment Projects You Can Build Yourself by: Kathleen M. Reily is also a book that can be introduction or addition to the video to explore ways to repurpose plastics items. This lesson can be as long and as short as the teacher desires and the interest of the students. Students can work individually; in groups or it can be a project completed at home for a family project.

Lesson 5: Sea Creatures

Common Core Standard: SL.K.4 Describe familiar people, places, things, and events and, with prompting and

support, provide additional detail.

Objectives: Students will create/brainstorm a list of sea creatures that call the ocean their home. Teacher and students will create a KWL chart about the sea creatures that call the ocean their home.

Begin the lesson by completing the K and W part of the KWL chart with students' responses to, What kinds of sea creatures live in the ocean and what do they know about that sea creatures. For example: Starfish- they live at the bottom of the ocean floor. I will read: A Swim through the Sea by: Kristen Joy Pratt, this book will take students on a exploration of the ocean from A to Z giving students a better understanding of the sea creatures that call the ocean their home.

Follow Up Question: Have students do an independent writing activity: Have students write about what they learned or what is their favorite sea creature and giving at least one reason why.

Lesson 6: What happens to Plastic? Where does it go?

Objective: Students will identify and locate on the map the where the plastic ends up in the Pacific Ocean. Students will be explained about the garbage patch in the Pacific Ocean. Students will video a short video in school tube, a news piece done by Good Morning America investigating the garbage patch.

Students will watch two short videos about the Garbage Patch done by Good Morning America.
http://abcnews.go.com/GMA/JustOneThing/video/trash-found-fish-garbage-food-9735987

http://www.schooltube.com/video/945c3a7d2010a9c05ff4/

During the video, I will stop at certain points to check for student understanding and comprehension. After the videos have been watched, students and teacher will locate on the map the locations the video discussed and the pattern of the currents and the directions of the currents that eventually bring the plastics altogether to form the garbage patch in the ocean. Read: Where the Garbage Go? by: Paul Showers, this book will give students the knowledge they need to better understand what happens to the garbage and where it goes.

Lesson 7: Sink or Float

Objective: Students will test which plastic sink or float in water. Students will discuss which type of sea creatures will digest the plastic that sink and float depending on what marine zone they get their food source from.

Students will test various plastics items brought in from home and chart with the teacher if the plastic floats, floats in the middle of the ocean, or sinks to the bottom. After charting and plastics introduce the Three Marine Zones: The surface zone, the pelagic zone, and the benthic zone. Discuss and draw a visual chart while teaching the students about these three zones and draw and label the different kinds of fish that eat gather their food in the different zones. The ten sea creatures that can be used are.

1. Bottlenose Dolphin: feeds below the surface
2. Orca: feeds below the surface
3. Gull: feeds on shore, on top of water
4. Sperm Whale: feeds below surface
5. Common Dolphin: feeds below surface

6. Loggerhead Sea Turtle: feeds on top of water and below surface
7. Elegant Tern: feeds on top of water and shallowly below the surface
8. Sea Bass: feeds below surface
9. Foster's Tern: feeds on top of water and shallowly below the surface
10. Sea Otter: feeds below surface

After discussing the about sea creatures and labeling which zone the sea creatures finds their food, and the float and sink activity, students will then describe which plastic the sea creature will digest.

Lesson 8: Expository Writing Piece

Common Core Standard: W.K.2 Use a combination of drawing, dictating, and writing to compose informative/explanatory texts in which they name what they are writing about and supply information about the topic.

L.K.1 Demonstrate command of the conventions of standard English grammar and usage when writing or speaking

L.K.2 Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing

Objective: Students will write at least 2 facts that they have learned about the importance of recycling plastic and the effects it has on the sea creatures.

Book list for read aloud:

I Can Save the Ocean! : The Little Green Monster Cleans Up the Beach by: Allison Inches

The Adventures of a Plastic Bottle by: Allison Inches

I Can Save the Earth! : One Little Monster Learns to Reduce, Reuse, and Recycle by: Allison Inches

The Three R's: Reuse, Reduce, Recycle by: Nuria Roca

Why Should I Recycle? by: Jen Green

Where the Garbage Go? by: Paul Showers

Don't Throw That Away! A Lift-the-Flap Book about Recycling and Reusing by: Laura Bergen

A Swim through the Sea by: Kristen Joy Pratt

Over in the Ocean: In a Coral Reef by: Marianne Berkes

Commotion in the Ocean by: Giles Andreae

Way Down Deep in the Deep Blue Sea by: Jan Peck

What's It Like to be a Fish? by: Wendy Pfeffer

Ocean Life From A to Z by: Cythia Stierle

Awesome Ocean Science by: Cindy A. Littlefield

Recycle! A Handbook for Kids by: Gail Gibbons

Planet Earth: 25 Environment Projects You Can Build Yourself by: Kathleen M. Reily

Plastics by: Kate Weber

Recycling Plastics by: Joy Palmer

50 Simple Things Kids Can Do to Save the Earth by: Earthworks Press

50 Simple Things Kids Can Do to do to Recycle by: Earthworks Press

Beautiful Junk: Creative Classroom Uses for Recyclable Materials by: Karen Brackett

Crafts from Recyclables: Great Ideas from Throwaways by: Colleen Van Blarison

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You Are What You Eat: Plastics and Marine Life http://www.pbs.org/kqed/oceanadventures/educators/pdf/OceanAdv-WhatYouEat

" Recycling Symbols on Plastics - What Do Recycling Codes on Plastics Mean - The Daily Green." Going Green, Fuel Efficiency, Organic Food, and Green Living - The Daily Green. http://www.thedailygreen.com/green-homes/latest/recycling-symbols-plastics-460321#slide-1

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