

## INSPIRE GK12 Lesson Plan



<b>Lesson Title</b>	The Trash Vortex
<b>Length of Lesson</b>	50 minutes
<b>Created By</b>	Claire Babineaux
<b>Subject</b>	Inquiry, Earth and Space Science
<b>Grade Level</b>	7 <sup>th</sup> -8 <sup>th</sup>
<b>State Standards</b>	1.c,d; 3.a, e; 4.c,d
<b>DOK Level</b>	2,3
<b>DOK Application</b>	DOK level 2: Cause/Effect, Infer, Interpret, Distinguish, Make Observations, Relate, Compare. DOK Level 3: Critique, Assess, Compare, Investigate, Develop a Logical Argument, Hypothesize.
<b>National Standards</b>	5-8: C: populations and ecosystems 5-8: D:Structure of the earth system 5-8: E: understandings of science and technology 5-8: F: populations, resources and environments Risks and benefits
<b>Graduate Research Element</b>	The importance of finding new uses for recyclable goods; New uses for glass; beach replenishment.

### **Student Learning Goal:**

The goal of this lesson is to introduce the students to the idea of conservation and recycling.

### State standards for 5<sup>th</sup>-8<sup>th</sup> grade Science:

1.c: Summarize data to show the cause and effect relationship between qualitative and quantitative observations. *The teacher will present statistics of recycling to the class and give the students a kick-start to the lesson using websites provided in teacher's notes.*

1.d: Analyze evidence that is used to form explanations and conclusions. *The students should develop a logical argument about recycling, i.e. for or against, and support their argument.*

3.a: Analyze how adaptations to a particular environment can increase an organism's survival and reproduction and relate organisms and their ecological niches to evolutionary change and extinction. *The students should understand how waste disposal affects the environment and can cause organisms to adapt to a polluted environment causing changes in their evolutionary pattern.*



3. e: Explain energy flow in a specified ecosystem. *The specified ecosystem for this standard will be the oceans. The students should understand how the Great Pacific Garbage Patch ended up where it is today and how it became so large.*

4.d: Research the importance of the conservation of renewable and nonrenewable resources including MS, and justify methods that might be useful in decreasing the human impact on global warming. *The students will use critical thinking to provide alternate uses for recyclable goods.*

National Standards 5<sup>th</sup>-8<sup>th</sup> grade Science:

C: (Inquiry): develop questions for regulations and behavior on the human effect.

D: (Investigate) :The Structure of the earth system

E: (Analysis): Causes of environmental degradation risk and benefit.

F: (Process): Natural hazards, risk & benefits, science technologies in society.

**Materials Needed (supplies, hand-outs, resources):**

Materials: Plastic trash bag, 1 bottle of water for each student, twine, common household goods that can be recycled

Resources: See teacher notes.

**Lesson Performance Task/Assessment:**

The students will demonstrate their understanding for this lesson by taking a quiz the next day and being able to identify: what and where the North Pacific Garbage Patch, how did the garbage get there, the difference between renewable and nonrenewable resources, what the three “R’s” are, know the definition of hazardous waste, and naming three reasons to recycle glass.

**Lesson Relevance to Performance Task and Students:**

Students will explore the resources provided to develop a logical argument about new ways to use the 3 R’s in their daily lives.

**Anticipatory Set/Capture Interest:**

Statistics on the amount of waste produced by the average American household, how much of this waste is recycled, what can be recycled, what countries recycle the most goods, what countries produce the most goods, etc.

**Guided Practice:**

A student/teacher led discussion of various recycling questions will be conducted. Sample questions are as follows:



1. What is recycling?
2. Who recycles?
3. Who can recycle?
4. What can be recycled?
5. What are some new uses for recyclable goods? Give specific examples.

**Independent Practice:**

The students will be provided a trash bag filled with common household items, as well as with the empty water bottles provided at the beginning of class. The goal of this activity is to propose a new use or make something useful out of these products. Examples of a product that can be made out of the empty water bottles provided at the beginning of class, is a floating device such as a raft or even an island.

**Remediation and/or Enrichment:**

Remediation: Individual IEP

Enrichment: Allow the students to explore other uses for recycled goods and present them to the class.

**Check(s) for Understanding:**

Class led discussion on recycling, conservation, and how the amount of waste produced effects the earth and the environment.

1. What are the 3 R's?
2. How can they be integrated into our city?
3. How can they be implemented into our school?

**Closure:**

The students will demonstrate their understanding for this lesson by taking a quiz the next day and being able to identify: what and where the North Pacific Garbage Patch, how did the garbage get there, the difference between renewable and nonrenewable resources, what the three "R's" are, know the definition of hazardous waste, and naming three reasons to recycle glass.

**Possible Alternate Subject Integrations:**

The issue of recycling and conservation affects many realms in science:

Chemistry: analyzing the chemicals that end up in plastic—demonstrating how harmful these chemicals can be to the environment, hazardous wastes.

Biology: delicacy of ecosystems, harmful effects of the human population on the environment.

Economics: the feasibility of recycling goods to make new products.

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### **Teacher Notes:**

The 3 R's are Reduce, Reuse, Recycle.

Resources: A blog about pollution on beaches in the Bahamas:

<http://www.earthwatch2.org/LFF/dappen/2008/03/what-is-main-form-of-pollution-you-are.html>

Good website for basic recycling data:

<http://www.grinningplanet.com/2004/10-05/recycler-recycling-article.htm>

Designer beaches:

[http://www.treehugger.com/files/2007/08/now\\_thats\\_what.php](http://www.treehugger.com/files/2007/08/now_thats_what.php)

This lesson has been designed in a manner to present the importance of recycling and conservation to a middle school science class.

For the Independent Practice portion of the lab, the teacher may divide the class into small groups or allow them to work individually.