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## **Sustainability Unit Example: Middle School Social Studies and Science**

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**Designer(s):** Scarsdale School District

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How do curriculum and instruction change when sustainability becomes the guiding approach? How does the content become richer? How does the level of inquiry deepen? This document provides an example of a teacher-created unit that is grounded in the content and pedagogy of sustainability education.

### ***Background***

The unit described was an outcome of the 2007 Summer Sustainability Institute sponsored by the Children's Environmental Literacy Foundation (CELf: <http://www.celfoundation.org>), with facilitation provided by Creative Change Educational Solutions(<http://www.creativechange.net>), and Scott Beall consulting. During the intensive week-long institute, teachers gained content knowledge, resources and strategies to redesign their approach to curriculum and instruction using the lens of sustainability. Guided planning time and one-on-one mentoring at the institute enabled teachers to walk away with a draft unit plan to implement during the school year.

After the week-long institute, the teachers were provided on-going support and communication. Teachers sent their in-progress lesson plans to Creative Change and CELf, and received feedback and mentoring via phone and e-mail. This document is an outcome of this process.

## **Environmental Responsibility: Contributing to a Sustainable World**

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# Environmental Responsibility: Contributing to a Sustainable World

## **Introduction**

The people on our planet are using our natural resources at an alarming rate. As Americans, we use more energy per person than any other country in the world. Everyone in our country uses energy. We all drive cars, use oil and electricity for heating and air conditioning and consume food products from all over the world. The present rate at which we are consuming energy and natural resources far exceeds our earth's ability to continue to provide these resources. Additionally, more and more people in undeveloped countries are becoming aware of and desiring the modern comforts we enjoy every day. This is exponentially contributing to the problem. You can help. We can all do our part. We can all contribute to a sustainable world. Be creative and let's get to work!

## **History and Discussion/Big Ideas**

There are two important ways we can contribute. The first is through the traditional conservation methods of reduce, reuse and recycle. The second involves understanding and utilizing renewable forms of energy including solar, wind, and hydroelectric power.

## **The Task**

You are a member of a consulting team hired to educate and convince a community of the importance of implementing change in the area of responsible use of our natural resources. Each group will be assigned two topics to research. At the conclusion of the project, each group will present their findings to the class.

## **The Process**

- First you will be assigned a partner and two topics. One topic will be connected to conservation efforts and the other alternative energy solutions.
- Each group will research their topics and create a PowerPoint presentation following the specific requirements for your topics.
- Links are available to help you with information. You are not limited to these sites. Two great links as a starting point for many of the topics are [www.eia.doe.gov/kids](http://www.eia.doe.gov/kids) and [www.tvakids.com](http://www.tvakids.com)
- When the projects are complete (approximately 6 class periods), you will present them to the class.

## **General Guidelines for PowerPoint Presentations**

- Make it professional – no animations!
- Be clear and succinct
- Create your own background – no ready made templates
- Use bulleted list format – you can elaborate when you are presenting
- Include the following:
  1. Title Slide
  2. Table of Contents Slide with hyperlink buttons
  3. Required Content
  4. Information from Family Conversations
  5. Appropriate Illustrations

6. A Reference Slide with all Sources Used
7. An Ending Slide
8. Select a single slide transition for the entire show
9. Add timings if desired

### **Topic 1**

#### Conservation of Water

- Essential Question – Why do we need to conserve water?
- Research and report on the issue of water shortages worldwide.
- Identify ways in which you can save water in your homes.
- Talk to your parents about your ideas. Include a summary of your conversation in your presentation.

#### Resources

[http://whyfiles.org/131fresh\\_water/2.html](http://whyfiles.org/131fresh_water/2.html)

[http://www.usatoday.com/news/nation/2003-01-26-water-usat\\_x.htm](http://www.usatoday.com/news/nation/2003-01-26-water-usat_x.htm)

<http://www.monolake.org/socialwater/wctips.htm>

### **Topic 2**

#### Conservation of Paper

- Essential Question – Why do we need to conserve paper?
- Research and report on the issue of paper use worldwide.
- Identify ways in which you can save paper at home and at school.
- Talk to your parents about your ideas. Include a summary of your conversation in your presentation.

#### Resources

<http://www.conservatree.org/paperlisteningstudy/Forests/question62.html>

<http://www.nrdc.org/greensquad/library/paper.html>

[http://printscan.about.com/od/printersatwork/qt/tip\\_savepaper.htm](http://printscan.about.com/od/printersatwork/qt/tip_savepaper.htm)

### **Topic 3**

#### Conservation of Electricity

- Essential Question – Why do we need to conserve electricity?
- Identify ways in which you can save electricity at home and at school.
- Talk to your parents about your ideas. Include a few sentences about your conversation in your presentation.

#### Resources

[http://en.wikipedia.org/wiki/Environmental\\_concerns\\_with\\_electricity\\_generation](http://en.wikipedia.org/wiki/Environmental_concerns_with_electricity_generation)

[http://en.wikipedia.org/wiki/Compact\\_fluorescent\\_lamp](http://en.wikipedia.org/wiki/Compact_fluorescent_lamp)

<http://www.ttec.co.tt/consumertips/conserveelectricity/>

### **Topic 4**

#### Conservation of Gasoline

- Essential Question – Why do we need to conserve gasoline?
- Research and report on the issue of gasoline use worldwide.
- Identify ways in which you and your family can conserve gasoline.
- Talk to your parents about your ideas. Include a few sentences about your conversation in your presentation.

#### Resources

[http://www.energy.ca.gov/gasoline/gasoline\\_q-and-a.html](http://www.energy.ca.gov/gasoline/gasoline_q-and-a.html)

<http://inventors.about.com/od/gstartinventions/a/gasoline.htm>

[http://www.nh.gov/oep/programs/energy/conservation\\_gas.htm](http://www.nh.gov/oep/programs/energy/conservation_gas.htm)

### **Topic 5**

#### Conservation of Home Heating Oil, Natural Gas and/or Electric Heat

- Essential Question – Why do we need to conserve heating fuels?
- Research and report on the issue of fossil fuel use worldwide.

Find out what kind of heating fuel/electricity you use in your home.

Identify ways in which you can save heating fuel in your home.

Talk to your parents about your ideas. Include a few sentences about your conversation in your presentation.

#### Resources

[http://en.wikipedia.org/wiki/Fossil\\_fuel](http://en.wikipedia.org/wiki/Fossil_fuel)

<http://www.nrdc.org/air/transportation/aoilpolicy2.asp>

<http://www.puco.ohio.gov/PUCO/Consumer/Information.cfm?id=6478>

## Topic 6

### Recycling of Paper, Glass and Plastic

- Essential Question – Why is recycling important?
- Describe the process of recycling paper, glass and plastic. How does it work?
- How can we do better in our recycling efforts?
- Talk to your parents about your ideas. Include a few sentences about your conversation in your presentation.

#### Resources

<http://people.howstuffworks.com/landfill1.htm>

[http://www.tappi.org/paperu/all\\_about\\_paper/earth\\_answers/EarthAnswers\\_Recycle.pdf](http://www.tappi.org/paperu/all_about_paper/earth_answers/EarthAnswers_Recycle.pdf)

[http://www.glassworks.org/product\\_stewardship/how.html](http://www.glassworks.org/product_stewardship/how.html)

<http://www.eia.doe.gov/kids/energyfacts/saving/recycling/solidwaste/plastics.html>

## Topic 7

### Solar Energy

- Essential Question – Why is it important to develop and utilize alternative forms of energy?
- Research and report on solar energy – How does it work? What is it used for?
- Would it be possible for you to use solar energy in your own home?
- Talk to your parents about your ideas. Include a few sentences about your conversation in your presentation.

#### Resources

<http://science.howstuffworks.com/solar-cell5.htm>

<http://www.1stlightenergy.com/>

<http://www.eia.doe.gov/kids/energyfacts/sources/renewable/solar.html#fromthesun>

## Topic 8

### Hydroelectric and Wind Power

- Essential Question – Why is it important to develop and utilize alternative forms of energy?
- Research and report on hydroelectric power – How does it work? What is it used for?
- Research and report on wind power – How does it work? What is it used for?
- Talk to your parents about alternative forms of energy. Include a few sentences about your conversation in your presentation.

#### Resources

<http://www.tvakids.com/electricity/hydro.htm>

<http://www.tvakids.com/electricity/greenpower.htm>

<http://www.eia.doe.gov/kids/energyfacts/sources/renewable/wind.html>

<http://www.eia.doe.gov/kids/energyfacts/sources/renewable/water.html>

## **Topic 9**

### Nuclear Energy

- Essential Question – Why is it important to develop and utilize alternative forms of energy?
- Why is nuclear energy controversial?
- Research and report on nuclear energy – How does it work? What is it used for?
- Develop a personal opinion in favor or opposed to nuclear energy.
- Include your opinion backed up with facts in your presentation.
- Talk to your parents about nuclear energy. Include a few sentences about your conversation in your presentation.

Resources:

<http://www.eia.doe.gov/kids/energyfacts/sources/non-renewable/nuclear.html>

<http://www.eia.doe.gov/kids/energyfacts/sources/non-renewable/nuclear.html>

## **Topic 10**

### Green Buildings

- Essential Question – What is a green building? Why is it important to incorporate this type of construction into future construction projects?
- Research and report on green construction
- Do you think green construction should be required by law?
- Include your opinion backed up with facts in your presentation.
- Talk to your parents about green construction. Include a summary of your conversation in your presentation.

Resources

[http://en.wikipedia.org/wiki/Green\\_building](http://en.wikipedia.org/wiki/Green_building)

<http://www.eia.doe.gov/kids/energyfacts/sources/non-renewable/nuclear.html>

## **Evaluation**

- Each student is expected to work diligently and to the best of their ability for the entire class period every day.
- Each student is expected to contribute to the best of their ability to the group effort.

Grades will be determined based on three areas:

1. The Quality of the Presentation – Did you follow the guidelines?
2. The Content of the Presentation – Quality of your research
3. The Quality and Enthusiasm of your Verbal Presentation to the Class