

SUNY Orange 2010 Sustainability Teaching Guide

Topic of Lesson	Incorporating Sustainability in Elementary Mathematics Curriculum
Course Title	Foundations of Elementary School Mathematics
Posted by/ person to contact	Maria Blon
Instructor comments/ rationale as to how/why this topic fits into course	We used an Earth Day theme to review the topics that we covered in Foundations by finding ways that sustainability can be incorporated when teaching children mathematics.
Concept/topic to teach	Sustainability and Mathematics
Learning outcomes	Students will collaboratively create a list of activities which can be done with their future elementary students.
Reading Assignment	Ideas can be found at Earth Day booths and brochures, plus on the internet or in library books.
Preparation Materials Time	Students need to understand what the word sustainability means so that they know what to research. We typed up the ideas together on a computer in the classroom. This activity took 30 minutes of class time to attend Earth Day activities and 20 minutes in class sharing ideas.
Activity Introduction Activity Closure	Students will collaboratively create a list of activities which can be done with their future elementary students. The list is created then shared with both classes.
Assessment/evaluation or follow up	I did not grade this activity because we used it as a review.

<p>Relationship to sustainability</p>	<p>We collected ideas for incorporating sustainability in an elementary math curriculum. Here are the ideas collected by Foundations of Elementary School Math students on SUNY Orange Earth Day 2009.</p> <p><u>Statistics</u></p> <ul style="list-style-type: none">• Gather statistics on the gas mileage of solar cars, hybrid cars, and hydrogen injected car and compare using mean, median and mode, plus create graphs to show the differences.• Compare organic to regular chips for taste, cost and nutrition.• Create a graph showing how many plastic bags are used at Hannafords over the last 5 years and see if we can calculate how many people brought cloth bags.• Have kids bring in recyclables from home and make a graph of how many bottles, cans, etc. the class brought in. <p><u>Problem Solving with Polya's Steps</u></p> <ul style="list-style-type: none">• We buy a solar hot water system for \$9,000. How long until we get that money back?• How many cans do we need to recycle to have a pizza party? <p><u>Venn Diagrams</u></p> <ul style="list-style-type: none">• Create a Venn diagram comparing the florescent light bulbs to the incandescent light bulbs.• People who recycle cans, glass, paper placed onto a 2 or 3 circle Venn diagram.• Compare two books about sustainability on a Venn Diagram <p><u>Logic</u></p> <ul style="list-style-type: none">• Draw an Euler diagram to show the following: If Bob recycles then he is helping the environment. Bob doesn't recycle, therefore..... <p><u>Addition and Subtraction</u></p> <ul style="list-style-type: none">• We planted 3 fruit trees and 4 maple trees, how many trees did we plant all together? How much oxygen will they produce? <p><u>Multiplication and Division</u></p> <ul style="list-style-type: none">• If we recycle twenty cans and you earn 5 cents per can, how much money will you receive?• We have 20 cans and four different recycling machines. How many cans will go in each machine if they all get the same amount. <p><u>Addition and Subtraction of Integers</u></p> <ul style="list-style-type: none">• Calculate the temperatures rising and falling.• Compare growth rates of plants at different elevations.• Research the temperatures needed to grow different types of plants, bacteria or animals or bugs.
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	<p><u>Multiplication and Division of Integers</u></p> <ul style="list-style-type: none">• If we use cloth bags, how many plastic bags did we save?• Use scrap paper to practice multiplication or to make a big multiplication table
Relationship to other topics	Biology, business
Alternatives	Having a guest speaker talk to students would be a nice alternative if there is not an Earth Day celebration.