



ENVIRONMENTAL LITERACY

Subject/course: Math Grade level(s): 7

Unit title: Statistics and tragedy of the commons

INSTRUCTIONS

Before beginning, please read all sections of this UbD template to find out where your curricular information belongs. Please hyperlink all websites referenced and provide full citations for any reference materials you are including.

UNIT/LESSON SUMMARY

This unit will incorporate sustainability education with NYS math standards. Students will be introduced to education for sustainability through tragedy of the commons, and brainstorming. Tragedy of the commons will be taught through a "Fishing for the Future" activity. The idea of sustainability will be defined as a class after brainstorming ideas of "what sustainability means to me"(idea salad).

Stage 1 - Desired Results

Established Goal(s) :

NY State Standards addressed by the lesson (Include minimum of two state frameworks goals for this subject and grade level that this lesson aligns to):

- *(7S1) identify and collect data
- *(7S3) convert data into a double line graph
- *(7S6) read and interpret data represented by a graph
- *(7RP) find percent of change

National Education for Sustainability Standards addressed by the lesson (Include minimum of two EfS standards that this lesson aligns to):

- *(1.1)intergenerational responsibility
- *(2.2) tragedy of the commons

Unit Goals:

- *Students (sts) will define sustainability
- *sts will discuss resources and personal responsibility to ensure future generations use of the commons
- *sts will compute percent of change and identify as a decrease or increase
- *sts will create a double line graph
- *sts will make predictions from a graph
- *sts will understand the tragedy of the commons

Outcomes (How can sustainability education help your students learn this?)

Enduring Understandings: (what understandings are desired)

Students will understand that...

- Actions have consequences
- What the Tragedy of the commons Means
- How to use mathematical concepts to help support an idea

Essential Questions: (what essential questions will be considered?)

- Do we have a personal responsibility to ensure future generations use of global commons?
- Is the cost/effort of saving (or not saving)our oceans worth it?
- How do math concepts impact global issues?

Name: Eileen Pillig

School: Rye Neck Middle School

<p><i>Students will know...</i></p> <ul style="list-style-type: none"> • graphs need to have titles, axes labels, keys, equal intervals • the formula for percent of change • definition of sustainability 	<p><i>Students will be able to...</i></p> <ul style="list-style-type: none"> • graph and interpret a double line graph • compute percent of increase or decrease • "experience" and discuss tragedy of the commons
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Stage 2 – Assessment Evidence

<p>Performance Task(s): (what evidence will show that students understand?):</p> <p>I. sts will create a poster including their double line graph, and percent of change</p> <p>II. sts will use data from their graph to estimate the percent of change</p> <p>III. as a group, sts will discuss tragedy of the commons and write down ideas of sustainability</p>	<p>Other evidence: (quizzes, tests, prompts, observations, dialogues, work samples):</p> <p>Quiz on percent of change/double line graphs</p> <p>Sts will display and discuss their poster</p> <p>Extra credit: sts will research and write a summary of current fishing restrictions related to sustainability</p>
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Stage 3 – Learning Plan

<p>Learning Activities: (what will students do and what will you, the teacher do, to prepare the students to achieve the desired outcomes)?</p> <ol style="list-style-type: none"> 1. Mini lesson on double line graphs and percent of change 2. "Fishing for the Future" activity (www.FacingTheFuture.org) 3. Students will discuss what happened with the fish in the fishing activity (tragedy of the commons) 4. Students will write down ideas of "what sustainability means to me" (idea salad) 5. Class will determine one definition of sustainability and write it down 6. Sts will create a poster showing their double line graph (from the fishing activity) , percent of change, and a brief summary of tragedy of the commons 7. Sts will discuss their posters to the class
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<p>Resources: What community resources can be used in planning and teaching (websites, individual speakers, organizations, resources)? Please hyperlink all websites to the appropriate URL.</p> <p>facingthefuture</p> <p>www.noaa.gov</p> <p>www.nps.gov</p>
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Stage 4 – Addendum

<p>Please list the file names for all elements of your Unit/Lesson. (Eg. include all new handouts, worksheets, assignments, tests, and rubrics, and hyperlinked web resources and supplemental reading documents.</p> <p>Fishing for the Future.pdf</p> <p>Mini lesson on line graph and percent of change</p> <p>Sustainability activity</p>
