

<b>Unit Title:</b> Introduction to Sustainability and Environmental Economics
<b>Grade Level:</b> (example: 9, 10, 11, 12 or 7-8) 9-12
<b>Subject Area:</b> (example: Science, Physics; English, Short Stories) AP Environmental Science
<b>Duration/Length/Number of class periods:</b> (example: 5 class periods) 8 class periods
<b>Description:</b> Students will be able to describe the key factors of sustainability and will be able to explain how economic factors may influence how sustainable we are as a society.
<b>Established Goals (National, State, Local):</b> <b>College Board CED for AP Environmental Science: Big Idea #4 Sustainability (STB):</b> Human survival depends on developing practices that will achieve sustainable systems. A suitable combination of conservation and development is required. The management of resources is essential. Understanding the role of cultural, social, and economic factors is vital to the development of solutions.

<b>What Enduring Understandings are desired?</b> Human survival depends on developing practices that will achieve sustainable systems. Understanding the role of cultural, social, and economic factors is vital to the development of solutions.
<b>What Essential Questions will be considered?</b> What are the key factors to sustainability? What role do economic issues play in sustainability? What relationships are there between economics and environmental issues?
<b>Students will know / be able to:</b> I can describe what the Tragedy of the Commons is and how it relates to sustainability. I can define subsidies and tax credits and describe how they relate to environmental problems. I can discuss how purchase choices and affluence can have an environmental impact. I can describe factors related to an environmental problem, including the relationship to economics.

Description	Formative	Summative	Introductory Activity	Learning Activity	Student Technology Used	Teacher Technology Used	ISTE Standards
Link to slides to drive unit. <a href="http://bit.ly/33756QH">http://bit.ly/33756QH</a> contains the link to the slideshow that is used to run through this unit. Links to much of the work can also be found in this							

location-as you finish activities you progress through the slides to discuss the information contained here.							
<b>Using Common Resources Activity:</b> hands on simulation to demonstrate the concept of Tragedy of the Commons, includes worksheet to record results and class discussion about the results and what the students think it means. The slides in the description have information to introduce and the activity and guide the discussion. Activity 1 day, Discussion 1 day			x		sheets	slides	
<b>\$\$ Choices and Environmental Impact (bit.ly/2YjBv89):</b> Students will be asked to make decisions based on cost of 5 basic items and then will get “feedback” that talks about the environmental impacts of their choice. It is a Google form quiz with feedback, students will then have a choice of articles to extend their understanding and will also fill out a written assignment to demonstrate understanding. 1 day for students to complete activity				X	Form as a quiz	Form with feedback	1c, 3b
After discussing the different concepts (approximately 2 days to discuss and complete quizz) related to sustainability from the slideshow, assign Quizizz formative assessment to assess understanding of sustainability. <a href="https://quizizz.com/admin/quiz/5d41fd9bf79ef2001b05c8bc">https://quizizz.com/admin/quiz/5d41fd9bf79ef2001b05c8bc</a>	x				quizz	quizz	
<b>Sustainability and Environmental Issues Project:</b> To be done at the conclusion of the unit and should take approximately 3 days. The assignment requires students to research an environmental problem or issue and create a google site that demonstrates their understanding of that topic and the relationship to sustainability and economics. Link to directions for the project: <a href="http://bit.ly/2GFQLRM">http://bit.ly/2GFQLRM</a>		x			sites	Doc with hyperlinks, form	1,3, 6b,c,d
<b>Optional Enrichment:</b> Assign students Esri Geoinquiries Resource Consumption and Wealth-follow directions on linked document <a href="https://www.esri.com/content/dam/esrisites/en-us/media/pdf/geoinquiries/environmental-science/13-wealth-apes-geoinquiry.pdf">https://www.esri.com/content/dam/esrisites/en-us/media/pdf/geoinquiries/environmental-science/13-wealth-apes-geoinquiry.pdf</a>				x	Web site Geoinquiries		3

**Materials, tools and resources:**

Using Common Resources activity:

- 2 straws per person
- 3 Large size M&Ms per person
- 6 plain M&Ms per person
- 6 Goldfish per person
- 6 Frosted flakes per person
- 1 bowl per group

Other activities require device that can access Google products and internet access and will utilize Google docs,forms, sites, Quizizz (teacher creates account), Geoinquiries

**Unit Plan Author (name, school and optional email address or hyperlink to teacher’s web page) Kathy Kneeland, Armstrong High School**

**Additional credit given to Paul Anderson-thanks for sharing the Geoinquiries site with me**

