

# The 5 E's: A Model for Designing Lessons for Inquiry Planner<sup>1</sup>

## Logistics Information:

- a. Environmental Education Learning Cycle Example
- b. A synthesis of *Project WILD*, *Project Learning Tree-Places We Live*
- c. Iowa Core Essential Concepts  
Life Science
  1. Understand and apply knowledge of interdependency of organisms, changes in environmental conditions, survival of individuals and species.
  2. Understand and demonstrate knowledge of the social and personal implication of environmental issues.
- d. Iowa Core Curriculum Characteristics of Effective Instruction embedded throughout
- e. Last modified April 16, 2010

**Background Information** (What do observers need to know about our learners, classroom and school?): This learning cycle assumes a normal progression through the Iowa Core Curriculum.

## Materials Required:

Computer Internet access for students  
Teacher needs a packaged taco for demo  
Writing and drawing materials and some form of student journal  
Copies of articles of articles on sustainability (*Project WILD*, p. 453)  
Copies of student pages (*Project Learning Tree: Places We Live*, p. 124)

## Time Period:

10 - 45 minute class periods (approx 2 weeks).

**Name of the Unit:** Human vs. Ecosystem: The Good, The Bad, and The Ugly

- I. Plan of the Unit
  - a. Goals of the unit: The student will develop an understanding of how individual decisions can impact the environment, both locally and globally.
  - b. How this unit related to the curriculum:

Previous Grade/Course	Current Grade/Course	Next Grade/Course
Middle School Life Science	HS Biology/Environmental Studies	Components of Physics/Chemistry/Etc.

- c. Lesson Plan: Phases in a 5E Learning Cycle (in no particular order) are Engage, Explore, Explain, Elaborate, and Evaluate. There may be multiple experiences in each phase.

<sup>1</sup> Adapted from *Teacher to Teacher: Reshaping Instruction Through Lesson Study* (NCREL, 2002)

<b>Phases of the lesson: learning activities and key questions (and time allocation)</b>	<b>Student activities/ anticipated student reactions or responses</b>	<b>Teacher’s response to student reactions/ Things to remember</b>	<b>Evidence of Student Understanding</b>
<p><b>ENGAGE:</b> (1 period)  Teacher holds up a taco and asks the class “What do you know about this food item?”  The teacher engages the class in discussion of both the components of a taco and where each item originates and how it travels from source to mouth.  Teacher uses the following Internet link  (<a href="http://www.good.is/post/your-taco-deconstructed">www.good.is/post/your-taco-deconstructed</a>) or similar reference to give students a more explicit picture of the evolution of a taco.</p>	<p>Students will advance various ideas for what makes up a taco and where those ingredients come from...</p>	<p>Note: Use of a homemade taco would avoid the package label that will probably include a plethora of additional ingredients that are not necessary for the focus of this lesson.</p> <p>Note: During this learning cycle students are expected to complete journal entries, reflections, etc. at various stages of the lesson.</p>	<p>Students will offer the ingredients they think are in the taco and where they originated.</p>
<p><b>EXPLORE 1:</b> (1-2 periods)  Individually students will generate a list of foods they consumed in their most recent meal. Pick one item to trace back to it origins including each ingredient using simple flow diagram/map.</p>		<p>Students may need some guidance in determining the ingredients of non-labeled foodstuffs.</p>	<p>Student list and evidence of the trace diagram/map to origin of each ingredient.</p>

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<p><b>EXPLORE 2:</b> (1-2 periods)            Research the implications for energy consumption as it relates to the production and/or transportation of the food item. Make a simple flow diagram/map of the path.</p>		<p>Students may need some guidance in determining these implications for energy consumption.</p>	<p>Student diagram or map.</p>
<p><b>EXPLAIN:</b> (1 period)            Form collaborative groups possibly using similar food items. Ask them to discuss commonalities. List these commonalities and compare/contrast.</p>	<p>Students need to work as a collaborative group.</p>	<p>Note-Teacher needs to help group dynamics if needed. Each participant should have his or her voice heard.</p>	<p>Student list and teacher observation of group dynamics.</p>
<p><b>ELABORATE:</b> (1-2 periods)            Students will 1) trace the route of electrical energy from source to use, 2) describe effects on wildlife and the environment derived from various kinds of energy development and uses, and 3) evaluate the effects on wildlife and the environment as a result of their own energy use practices.</p>	<p><i>Flip the Switch for Wildlife (Project WILD, p.319)</i></p> <p>Students will be given appropriate questions from p.320 to answer as part of a presentation.</p>	<p>Note- The first task should be already completed.</p> <p>The teacher may need to help the students determine some implications for the involvement of energy in this regard.</p> <p>Teacher will guide a summary discussion after student presentations.</p>	<p>Journal entries</p> <p>Student presentations.</p>

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<p><b>ELABORATE:</b> (1-2 periods) Students will 1) define the different components of a sustainable community, 2) relate the effects of individual actions on the long-term health of the environment, and 3) explain how communities can become sustainable.</p> <p><b>EVALUATE:</b> Students develop graphic organizers and a presentation to illustrate how individual decisions can impact the local environment as well as distant communities. They will also measure their own ecological footprint.</p>	<p><i>Sustainability: Then, Now, Later (Project WILD, p. 449)</i></p> <p>Students create a skit demonstrating the lifestyle.</p> <p><i>Far-Reaching Decisions (Project Learning Tree: Places We Live, p.117)</i></p>	<p>The teacher may need to help the students determine some implications for the long term of the environment.</p>	<p>Journal entries Student list Student skit/presentation</p> <p>Students will write a detailed account from the perspective of a consumer product or a resource, tracing its path and experiences from points A to Z. Students should address the effects along the way.</p>

**EXTENSION**

Students will document the consequences of five of their recent decisions. Then have students imagine they have changed the five decisions (for better or for worse). How would those changes affect the local and distant communities differently?