**Teacher:** Anne Lapera **Class**: Ecology

The format of this lesson plan is good, but I am not sure the activities are advanced enough for grade 12.

**Grade**: 12

**Topic**: Agricultural Systems

**Standards Addressed**: 4.4.12.A: “Research and analyze the social, political, economic, and environmental factors that affect agricultural systems.” (<http://www.pdesas.org/Standard/Views#28643|23424>)

**Big Ideas**: “[Humans depend upon the management and practices of agricultural systems.](javascript:__doPostBack('ctl00$_PageContent$rptBigIdeas$ctl04$lnkBigIdea',''))” (<http://www.pdesas.org/module/sas/curriculumframework/>)

**Essential Questions**: “In what ways are human societies and cultures impacted by management and practices of agricultural systems?” (<http://www.pdesas.org/module/sas/curriculumframework/>)

**Concepts Addressed**: “Agricultural science influences farming practices, efficiency, and nutrition over time.” (<http://www.pdesas.org/module/sas/curriculumframework/>)

**Competencies Addressed**: Recognize that agricultural sciences and technologies strive to increase efficiency while balancing the needs of society with the conservation of our natural resources.

**Specific Objectives**: To help understand the importance of maintaining a sustainable agricultural system and the manner in which agriculture impacts humans.

**Required Materials**: Projector, PowerPoint, topsoil, sandy soil, plastic containers, clay/silt soil, troughs, and tomato seeds.

Activities:

* Engage- ask students to provide a definition of agriculture (write answers on board for entire class to see). Ask students why agriculture is important (write answers on board for entire class to see).
* Lecture: I will give a powerpoint presentation explaining the different types of agricultural systems, including their specific processes and where they occur.
* Explore: the students will be divided into groups. Each group will then be given a plastic container filled with a particular type of soil as well as tomato seeds and troughs. The students will then plant their seeds in their labeled container. This would be good place to emphasize variables and controls in an experiment. Also allow the students to decide the type of data to collect and when.
* Explain: The students will recorded the plant’s progress in journals, offering explanation for the plants’ growing progress and success.
* Elaborate: The students will then pick a particular type of agriculture system an research all about what vegetation it supports, including why and how, as well as its’ environmental impacts
* Evaluate: The students will then present their findings in a presentation style of the choosing (i.e. video, PowerPoint, posterboard, etc.)

**Assessment Strategies**:

Diagnostic: This will be addressed in the engagement part of the activity. I will be able to gauge the students’ prior knowledge based on their answers to the questions I ask

Formative: The students’ presentations will be accompanied by a rubric sheet which I will give to them prior to the presentation. I will then return the rubric after their presentation with my notes on their performance (this activity would not be graded).

Formative: The students will hand in their journals with their notes an explanations weekly. This would not be graded but rather returned each week with my comments to help them accurately examine the plants’ progress as well as the point of the experiment. You do not have to comment on all student formatives. Try to have students self or peer assess to make your time more manageable.

Summative: The students will write a lab report based on the experiment which they will design themselves. It will include an introduction, materials, methods, results, discussion, and conclusion. This assignment will be graded and returned with my comments. Will this lab report demonstrate mastery of the objectives of the lesson? If not, this is not a good summative.