

'Ewa 'Āina Education Initiative

Unit Plan: Hawaiian vs. Modern Food Production - accessible via the following URL <https://cutt.ly/9KgnGu6>

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'Ewa 'Āina Site: Kuhialoko

Detailed Lesson-Project Plan #3

Lesson Title: New Agriculture and Aquaculture Designs

Essential Unit Questions Addressed: Is there a best of both worlds to develop a system where modern and traditional methods are used for a sustainable outcome?

Educational Standards that the lesson will help students achieve

NCO 5.1 Develop solutions or interventions using information and data from inquiry or investigations in order to mitigate issues or problems in NR.

- Implement the problem solving process to address an issue or solve a problem in NR. Steps include:
 1. Identify and define the problem using information and data
 2. Select and use appropriate technology to gather information
 3. Generate criteria for determining and prioritizing alternative solutions
 4. Predict implications and consequences of alternative solutions using data or information, including legal and ethical ramifications
 5. Select a solution
 6. Create an action/management plan or pr
 7. ocedures for implementation of selected solution
 8. Evaluate results of implementing solution to determine effectiveness
 9. Suggest modifications or next steps to re-implement as needed

HĀ framework and/or Hawaiian Culture integrated into this lesson

The class will work in larger groups to develop an agriculture and/ or aquaponics system that uses techniques that are both modern and traditional to make the system as sustainable as possible to help relieve our island's dependence on imported food. Students will justify their choices as they incorporate both traditional and modern techniques. This project serves as a means for students to develop an understanding and respect for the sophistication of traditional Hawaiian food system management.

Materials needed

Student Assessments and Worksheets

CTE Presentation Rubric (although teachers may develop their own) - (link) <https://cutt.ly/MG2ysq4>

Pedagogy (methods) Used

Collaborative group and design engineering (design thinking).

- During this lesson, students will work in aquaponics/ agriculture groups to develop a system that uses both modern and traditional techniques to be more sustainable than the current modern system.

Pedagogy Used Cont.

- The completed projects can be teacher choice based on students, time, and materials available. The systems developed may be shared using any of the following methods include poster, video, slideshow, model, working model or other media.
- Upon completing the projects students will present their projects as a group (with each individual contributing to the system explanation), and complete a final project reflection.

Lesson Introduction Teacher led discussion about the field trip. What was seen, what could be used, habitat restoration, anything that really grabbed their attention during the field trip to help their memories. Discussion prompt: how did Kuhialoko demonstrate ‘āina momona - thriving land?

Instructional Sequence

Teacher Does	Students Do
Direct the students to stay on task and help facilitate group discussion and planning.	Work in groups based on agriculture, aquaponics or both. The modern and traditional groups of each are working together to design a working aquaponics or agriculture system.
Direct the students to stay on task and help facilitate group discussion and modeling.	Students construct a model, poster, slideshow or video to present their system.
Teacher facilitates transition between groups and uses the rubric to grade the presentations. Students asked to list aspects of system plans from other groups that they believe should be incorporated in to the system their group designed	Students present their project to the teacher, school admin, or others invited for the presentations. Students will keep track of “best ideas” from other groups in writing
Project reflection questions on the classroom screen. Students asked to share their reflection with a partner that was not in their cooperative group.	Students write their project reflection. Students share reflections in pairs.

Closure (Review, formative/summative assessment) (in reflection sharing pairs). Ask students to share with their partner why they were asked to learn about and consider traditional Hawaiian food system design as a part of this project.

Accommodations for at least 3 types of diverse learners

- For students that have issues presenting in the whole class, they can present individually to the teacher only or give them the option of making a video of their presentation.
- Provide prompts for the Individual Project Reflection.
- To assist in maintaining momentum, during project work time have a list of prompts to encourage student thinking.

Formative Assessment Method/s For This Lesson

- Teacher circulates among working groups, reviewed project sharing choices and provides coaching as merited

Explain How This Lesson Relates To the Unit Summative Assessment:

This lesson is the summative assessment

The unit summative assessment is cooperative group-project based and will be assessed through a performance based presentation rubric as well as an individual reflection.

- Presentation Rubric: see CTE Presentation Rubric in “Materials”.
- Individual student written project reflection - suggested prompts:
 - What techniques did your group use from each of the modern or the traditional methods?
 - Is there one method “better” than the other? Explain?
 - Which method is better for being sustainable and less impactful? Why?
 - Is your group model something we could implement here in Hawaii to reduce our dependence on food imports? Why or Why not?
 - What are some techniques that you didn't know about but want to learn more? What are they and why?
 - Describe your contributions to the group process during this project.
 - Detail 1-2 ways in which your contributions led to a successful project outcome.
 - Detail 1-3 ways in which you can improve your contribution to a collaborative effort.