

'Ewa 'Āina Education Initiative

Unit Plan: The Role of Lo'i in 'Āina Momona (Link:

https://drive.google.com/file/d/1LsOkcP7d8siMuVTkHP46_peia96Xlcyo/view?usp=sharing)

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'Ewa 'Āina Site: Kuhiawaho

Detailed Lesson-Project Plan #1

Descriptive Lesson Title - My Community

Essential Unit Questions Addressed:

How do we create, test, and validate a model for the dimensions of a lo'i?

Educational Standards that the lesson will help students achieve

- G.MG.3: Apply geometric methods to solve design problems (e.g., designing an object or structure to satisfy physical constraints or minimize cost; working with typographic grid systems based on ratios).
*
- Mathematical Practices:
 - Model with **mathematics**.
 - Construct viable arguments and critique the reasoning of others

HĀ framework and/or Hawaiian Culture integrated into this lesson

Focus: Strengthened Sense of Belonging (from the HĀ Framework)

I stand firm in my space with a strong foundation of relationships.

A sense of Belonging is demonstrated through an understanding of lineage and place and a connection to past, present, and future. I am able to interact respectfully for the betterment of self and others.

- a. Know who I am and where I am from*
- b. Know about the place I live and go to school*
- c. Build relationships with many diverse people*
- d. Care about my relationships with others*
- e. Am open to new ideas and different ways of doing things*
- f. Communicate with clarity and confidence*
- g. Understand how actions affect others*
- h. Actively participate in school and communities*

Materials needed

Videos, Media, Lesson Presentations/Resources

- [Video on Kuhiawaho](#) (Link: <https://www.youtube.com/watch?v=txtY-RJgOZY>) by the 'āina steward
- Map of Ahupua'a Waiawa (from 'Ewa 'Āina Inventory p.175)
- [Desmos Activity](#) (Link: <https://teacher.desmos.com/activitybuilder/custom/5ea24a9eb138c003879bb090?collections=5d5f07249bc22029aa1b0921>) Area of Composite Shapes

Student Assessments and Worksheets

- [Perimeter and Area Worksheet](https://drive.google.com/file/d/1B3TEgHFi8SAW9R4zd-QvF540au4yxQjw/view?usp=sharing) with answer key (Link: <https://drive.google.com/file/d/1B3TEgHFi8SAW9R4zd-QvF540au4yxQjw/view?usp=sharing>)

Supplies

- Pen/pencil
- Paper/notebook

Pedagogy (methods) Used to introduce, teach and close/review lesson

Lesson Introduction

Attention Getter/Engagement: Google slide pictures of high school mascots and ask students to respectively share common identifiers of that community and its identifiable areas and end with Pearl City. Pearl City tends to be “city” to “country” folk and the reverse is also true. Many students do not see a strong connection that Pearl City has to its ‘āina.

Instructional Sequence

Teacher Does	Students Do
Show slides of 5 different high school mascots/logos (e.g. Wai‘anae, Kaiser, Mililani, Waialua, Waipahu) and then Pearl City.	Jot down thoughts of the community and the famous areas within the community.
Show video of Kuhiawaho.	Watch the video.
Show the map.	Mark where Kuhiawaho is on the map.
Facilitate Desmos Activity.	Participate in Desmos Activity.
Pose the essential question: “How do we create, test, and validate a model for dimensions of a lo‘i?” and start a class discussion about the best shape for a lo‘i.	Brainstorm the best shape for a lo‘i and be able to defend ideas after presenting to a small group. Minimum requirement: Find/draw 3 other shapes (other than rectangle) and find the perimeter, area, and yield of kalo for the three using the Perimeter and Area Worksheet.
Monitor group discussions and support students to question the conjectures of their peers and push students to clearly support their own theories using the appropriate academic vocabulary and the use of logical reasoning skills	Participate in small group discussions to share their 3 ideas and propose the best shape for a lo‘i. They should also be able to question the reasoning of others and defend their own reasoning.

Closure

Formative Assessment: A teacher draws two different shapes and asks the students to find the perimeter, area, and to pick/defend which shape would be the best for a lo‘i.

Accommodations for at least 3 types of diverse learners

- Virtual only learners could participate in the small group through a breakout rooms
- IEP: could pick only regular polygons with whole number dimensions
- Students who are working on their presentation skills could present to just a partner or even record themselves presenting to someone outside of the class. Then, they can still listen and question the

reasoning of others to participate in their small group.

Suggested Formative Assessment Method/s For This Lesson

- Class discussions
- Desmos Activity
- Teacher draws two different shapes and asks the students to find the perimeter, area, and to pick/defend which shape would be the best for a lo'i.

Explain How This Lesson Relates To the Unit Summative Assessment

The summative assessment will be to create a presentation/video/paper on choosing the best lo'i field to impact yield and identifying factors that will affect the yield. This particular lesson is pivotal for students to be able to understand the best dimensions of a lo'i field.