



GIVING BACK TO THE ‘ĀINA

Culminating Activity

Unit Essential Question: How has our ahupua‘a changed over time and what can we do to mālama ‘āina today?

ACTIVITY AT A GLANCE

Students go to Kamananui Valley to document changes and help to restore native plants using plants that they have cared for at school. They gather information in the valley to use in their ahupua‘a final “newspaper” and to use in group presentations to the school community. Student presentations include a summary of learning as well as proposals for native Hawaiian plantings to mālama ‘āina at school.

KEY CONCEPTS

- People have introduced many plants to the Islands, some of which have become invasive.
- We can care for our ahupua‘a by restoring native plants, by conserving resources, and sharing our knowledge with others.
- Growing and sharing native plants helps us to mālama ‘āina.

SKILLS

Observing, analyzing, collaborating, constructing, interpreting, reporting, speaking, writing

TIME

4 class periods plus a field trip

ASSESSMENT

Group Project: Students:

- Present information to the school community about changes to Moanalua over time and how they mālama ‘āina in Kamananui Valley and elsewhere.

Hawai‘i State Standard Benchmarks

Social Studies 7: Geography: Environment and Society

- **SS.4.7.3** Analyze the consequences of human modification of the physical environment in Hawai‘i using geographic representations.

Common Core Benchmarks

Language Arts: Writing: Text Types and Purposes & Production and Distribution of Writing

- **LA.4.W.2.b** Develop the topic with facts, definitions, concrete details, quotations, or other information.
- **LA.W.4.4** Produce clear and coherent writing in which the development and organization are appropriate to task, purpose and audience.

Language Arts 4: Speaking and Listening: Presentation of Knowledge and Ideas

- **LA.4.SL.4** Report on a topic or recount an experience in an organized manner, using appropriate facts and relevant, descriptive details to support main ideas or themes; speak clearly at an understandable pace.

Nā Honua Maui Ola

‘Ike Honua: Sense of Place Pathway

- **NHMO.8.10** Preserve, protect, and sustain a healthy environment.

‘Ike Piko‘u: Personal Connection

- **NHMO.5.1** Design and implement projects demonstrating kuleana.

‘Ike Ho‘okō: Applied Achievement Pathway

- **NHMO.7.2** Demonstrate the use of acquired knowledge through application.



- Develop and present proposals to mālama 'āina in their schoolyard. Proposals include a sketch of planting area, list of plants to be grown, maintenance plan and list of supplies with a budget.

Individual Project

- Produce a “newspaper” with articles and illustrations that answer the unit essential question.

General Learner Outcomes

GLO 2: Community Contributor

- Cooperate with and help and encourage others in group situations.

GLO 5: Effective Communicator

- Communicate effectively and clearly through speaking, using appropriate forms, conventions, and styles to convey ideas and information.

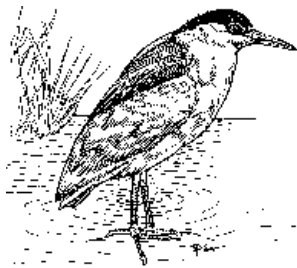
VOCABULARY

alien species – species that have been transported out of their native range by human activities

indigenous species – a species that is native to an area

invasive species – a species (usually non-native) that out-competes other species

native species - plants and animals that occur naturally in a given area



TEACHER BACKGROUND

For their final culminating projects, students are documenting the changes they have been learning about and will continue to discover in Moanalua. This awareness of change and the loss of native Hawaiian sites and plants should be the impetus for mālama 'āina (caring for the

MATERIALS

Provided:

- ✓ Student Assessment Overview and Rubrics (provided in Unit Introduction)
- ✓ Newspaper Project Instructions
- ✓ Learning Log 9 - Proposals
- ✓ Plant Clue Cards

Student Checklist for Field Trip:

- ✓ Hat
- ✓ Sunscreen
- ✓ Covered shoes
- ✓ Rain jacket
- ✓ Name tag
- ✓ Bottled water in backpack
- ✓ Lunch

ADVANCE PREPARATION

- Copy the Learning Log and Newspaper Project Instructions for each student.
- Prepare to project the rubrics for culminating projects (provided in the Unit Introduction) for use in class discussion.
- Make a set of Plant Clue Cards for each group of 3 - 5 students.
- Provide each student with a name tag.
- Copy the oli (chant) that you would like students to learn before going on the field trip. (See the Appendix for written copy of chant and the unit DVD for audio version of the chant.)
- For help in coordinating the out-planting of native plants in Kamananui Valley, contact the Division of Forestry and Wildlife Information and Education Coordinator at 587-4188.

environment). As students become more aware of the changes, they can see ways that their actions can help to restore some of what has been lost. During their field study, students will document changes they discover in Kamananui Valley. They will also document the community



service they do in the valley. The Department of Land and Natural Resources, Division of Forestry and Wildlife will provide assistance with materials and site preparation for planting of native plants in Kamananui Valley in areas designated for out-planting. In addition, students are challenged to consider ways that they can restore native plantings around their schoolyard. The scope of this endeavor will rely on a number

of factors including, available areas for planting (garden plots, hedge areas, scattered plantings), willingness of school administrators and maintenance staff to allow the planting, and commitments within the school community to care for the plants regularly until they become established. If areas to plant are limited, students could consider planting a native tree in the schoolyard.

TEACHING SUGGESTIONS

Part 1 - Introduction

1. Ask students to consider ways that plants provide clues to the past.

- Review what students learned in Lesson 4 about three ways to categorize plants:
 - 1) Native
 - 2) Polynesian-introduced
 - 3) Alien
- Ask students to share their ideas about the clues that plants provide to the past. (Native plants were the first to arrive, Polynesian-introduced plants arrived much later with Polynesians, and the plants classified as alien are the most recent arrivals; some of which are invasive.)
- Explain that students will be going to Kamananui Valley to discover and document ways that people have changed the environment by introducing plants.
- Divide the class into ‘ohana groups of 3 - 5 students per group. Explain that these ‘ohana groups will be working together on culminating projects and hiking together into Kamananui Valley.
- To help prepare for the field study, challenge groups to categorize the plants on the Clue Cards into 3 categories: native, Polynesian-introduced, and alien. Discuss clues to look for in the text on the cards. (See answers in table below.)

Discussion Questions:

- What makes a plant “native”?
- What could be some clues to native plants? (Seed impressions in cooled lava, first plant to grow on a lava flow)
- What are clues that Polynesians introduced plants? (Many uses by Hawaiians)

Plant Clue Cards		
Native	Polynesian-Introduced	Alien
Hala*	Hau	Strawberry Guava
‘Ōhi‘a	Kukui	Eucalyptus
Pala‘ā	‘Ōhia ‘ai	Clidemia
		Laua‘e

*Hala is a native tree, but the ones growing in Kamananui are a Chinese variety.



2. Review students’ work to categorize the Plant Clue Cards.

- When groups are done, project the table above and have groups check their categories.
- Discuss how plants help us to understand the past.
- Discussion Questions:
 - What clues did you use to identify native plants?
 - What were some of the clues you used to identify Polynesian-introduced plants?
 - How did technology play a role on the arrival of plants in the Islands? (Ship and jet travel brought more people and more plants to Hawai‘i.)
- Explain that alien invasive plants are out of place in Hawai‘i, but not invasive in their home habitats.
- Collect the clue cards and let students know that they will be hunting for these plants when they visit Kamanui.

3. Group Projects: Revisit the unit essential question: *How has our ahupua‘a changed over time and what can we do to mālama ‘āina today?*

- Discuss ways that the students can help to mālama ‘āina (care for the land):
 - Sharing what they have learned about changes to Moanalua over time and the need to mālama ‘āina
 - Bringing back native plants at school and in Kamanui Valley
- Explain that students will have opportunities to share what they have learned with others in the school community. They will also be able to plant native plants in Kamanui Valley and in the schoolyard, pending approval from the school administration.

4. Guide student groups in developing their mālama ‘āina schoolyard proposals.

- Challenge each ‘ohana group to develop a mālama ‘āina schoolyard proposal for planting native plants at school.
- Have ‘ohana groups meet and draw up a list of the things that they believe are needed in a mālama ‘āina schoolyard proposal.
- Ask groups to share their ideas and then distribute **Learning Log 9**. Discuss the details that will be needed. Note: the recommended native plants are for leeward schools below 500 ft elevation. See Resource (listed at end of this lesson) for plant nursery information.
- Show students the sample rubric for their proposals and discuss criteria for evaluating their written proposal and presentation.
- Set a due date for students to complete their proposals and present them to the school community.

5. Individual Projects: Discuss the individual “newspaper” culminating project.

- Distribute the **Newspaper Project Instructions** and discuss the “newspaper” students are to write to address the essential question.
- Project the rubric on screen and review the criteria that will be used to evaluate the student newspapers.
- Discuss the descriptors for the 1 - 4 scale.

Part 2 - Preparing for the Field Study

6. Encourage students to think about information and images they want to collect for their newspapers and presentations during their field trip to Kamanui Valley.

Discussion Questions:



- How will we gather information and document change in the valley?
- How should we document our community service to share with the school community?
- Note that each group will receive plant clue cards to use with “stops” along the valley hike where students will look for the plants.
- Discuss why it is important to give back to the communities where we live.
- Combine the 'ohana groups to form two large groups for the field study. Students will work within their small groups, but hike with a leader in a combined group.

7. Prepare protocol for the field trip. Discuss safety, appropriate behavior, and what to wear and bring.

- Have students practice one of the oli or mele presented on the Oral Traditions of Moanalua DVD.
- Discuss the meaning of the chant and why it is part of the protocol for visiting the site. If desired, ask a Hawaiian cultural practitioner to assist students with protocol.
- Review appropriate clothing to wear for the field trip – clothes that you don't mind getting dirty such as old shorts and t-shirt, shoes, socks, and hat; and what to bring: backpack with drinking water, snack, lunch, sunscreen, and insect repellent.

Part 3 - Field Study

9:00 Arrive Kamananui Valley

Group 1

9:30 Service - Out-planting native plants - documenting plants at site
 10:00 Hike - Plant Clue Cards
 11:30 Lunch at bridge 7 - petroglyph rock
 12:00 Hike - return
 1:00 Board bus and return to school

Group 2

9:30 Hike - Plant Clue Cards
 11:00 Lunch at bridge 7 - petroglyph rock
 11:30 Hike - return
 12:15 Service - Out-planting native plants - documenting plants at site
 1:00 Board bus

Part 4 - After the Field Study

8. Discuss what students learned on the field trip.

- Ask students to share their reflections from the field site visit.
- Refer students to their ahupua'a maps and find the area where they hiked into the valley. Review the physical features of the ahupua'a and discuss what students found.
 - What did they notice about Moanalua Stream when they hiked in the valley?
- What plants were most common? What does this tell us about human impact on the valley?



9. Allow time for 'ohana groups to work on their presentations and proposals.

- Remind students of your expectations for cooperative group work and participation by everyone in the group.
- Invite other classes and the school administration to hear students' group presentations about Moanalua and their proposals for native plants in the schoolyard.
- Allow students to complete their individual newspapers either in class or as homework. (Be aware that if you assign the projects for homework some students may receive assistance from parents that will skew your assessment of the student gains.)

10. Finish preparations and have students present to the school community.

- Have groups practice their presentations and have students provide suggestions.
- Have students post their newspapers around the area where they will make their presentations.

11. Complete the K-W-L chart that was established in Lesson 1.

- Ask students to record on the chart what they learned about the ahupua'a.
- Celebrate the students' accomplishments!

ADAPTATIONS / EXTENSIONS

Have students submit their proposals for schoolyard native plantings to an agency for funding. The following is a list of potential funding sources that support student-based forestry grants:

- Kaulunani www.kaulunani.org: <http://www.kaulunani.org/>
- Kōkua Hawaii Foundation: <http://kokuahawaiifoundation.org/>
- Project Learning Tree (certified educators) <http://www.plt.org/> State contact is Division of Forestry and Wildlife Education Coordinator: www.hawaii.gov/dlnr/dofaw
- See also The Hawaii Environmental Education Alliance website for information on local and national grant opportunities posted for schools and non-profits: <http://heea.org/core/news/list.aspx> Scroll down to Grants to view options.

RESOURCES

The Backyard conservation booklet is a great resource for educators to connect - in a simple and concise way - effective and meaningful things they can do to practice conservation in their own backyard or classroom: <http://hawaii.gov/dlnr/dofaw>. The booklet is in the "Spotlight" section of the website.

Nursery for native Hawaiian plants: Hui Kū Maoli Ola, Native Hawaiian Plant Specialists located in Kāne'ōhe. See: <http://www.hawaiinativeplants.com/our-plants.html>



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LEARNING LOG 9

NAMES _____

DATE _____

Proposal Title: _____

Your proposal should include:

- Sketch showing the dimensions of the garden plot (this can be a border or a garden plot, or scattered planting)
- List of the plants you want to include in the garden
- Budget for the garden including plants, fertilizer or other needs
- Plan for caring for the garden

➤ Be prepared to present your proposal to the school community. Include a summary of what you have learned about changes to Moanalua over time to explain why planting native plants is a good idea.

➤ Project due on: _____

* The following native plants are recommended for leeward area schoolyards: koa, māmaki, 'ākia, pōhinahina, kokio ke'oke'o



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NEWSPAPER PROJECT INSTRUCTIONS

NAME _____

DATE _____

UNIT ESSENTIAL QUESTION

How has our ahupua'a changed over time and what can we do to mālama 'āina today?

1. Write your own newspaper with 4 amazing, informative and captivating articles:

Three required ahupua'a articles (Be sure you answer the unit essential question above.)

- Ahupua'a Article: a feature article focused on the theme of change in our ahupua'a
- Botany Column: a non-fiction/research article about a native or Polynesian-introduced plant of your choice
- Reflection - a personal narrative reflecting on our community service in Kamananui Valley and why it is important to mālama 'āina (care for the land)

One free choice article (Choose your own topic from the following):

- Alien Invaders: what makes alien plants succeed and what can we do about it?
- Mo'olelo of Moanalua: Retell one of the mo'olelo you have learned about Moanalua
- Hula of Moanalua: Describe what you have learned about the significance of hula in Moanalua

2. Format your newspaper (see the illustration).

- Your 4 articles and any artwork must fit on 1 page 11" x 17".
- The font size for column text should be 12-point.
- Include one photo or illustration with your Ahupua'a Feature Article.
- Include an illustration of the plant featured in your Botany Column.
- Make sure that there is an appropriate balance between the text, white space, and graphics. (Look at a regular newspaper for a guideline!)
- The length of your articles is less important than strong writing traits. Make sure you've written enough in each of your writing pieces to fully develop your content and ideas.

3. Give yourself a score on a scale of 1 to 4 using the rubric provided.

--Newspaper Title----	
Article 1	Article 2
Article 3	Article 4

My score for social studies: _____

My score for language arts: _____

The blue fruits of this plant are filled! Pick one and see what is inside. Then pass the fruit to your leader so we don't spread them like the birds do.

Did you know? This plant is sometimes called “Koster’s curse,” named after the person who introduced it to Hawai‘i!



Your tūtū has asked you to gather **kukui** nuts. She has a mo‘olelo to share with you tonight. The nuts will make a kukui candle called ihoiho kukui. **Hint:** Look near the 3rd bridge for a tree with whitish leaves that have 3 - 5 points. Some say the leaves are shaped like the head of a pua‘a (pig). Look for its ears and snout.

Did you know? Hawaiians used the oil and nuts for medicine, and the nut’s black pigment for tattoos.



Your father is making a fish net. He has asked you to collect some hau branches. He wants to make floats for the net and make strong cordage. **Hint:** Look for a plant with heart-shaped leaves.

Did you know? Hawaiians also used this plant for medicine, sandals, and making fire.



Your ‘ohana needs to weave some mats for your hale. Find a **hala** tree with long leaves that you can use for weaving.

Hint: Look before the 5th bridge, near the cobblestone road for a tree with prop roots that grow above the ground.

Did you know? Impressions from the seeds of hala have been found in old lava rock on Kaua‘i.



Many types of **eucalyptus** trees were introduced to help stop erosion after forests were cleared in Hawai‘i.

Hint: Look for these trees near the first bridge.

Did you know? This tree has a chemical in its leaves that is preventing something. What do you think that is?



This plant has spores on some of its fronds. In more modern times it is often used in lei and decorations. You may see hula dancers with lei made from **laua‘e**.

Hint: Look for the stiff fronds with deep lobes.



Your mother has sent you into the valley to gather ‘ōhi‘a ‘ai (mountain apples). Can you find this tree? **Hint:** Look for this tree across from the 6th bridge under a big mango tree.

Did you know? The flowers of this plant are similar to the ‘ōhi‘a. Look for the fruits in July, August and November.



Birds eat the tasty **strawberry guava** fruit of this tree and help to spread it. New sprouts also come up from the roots of the trees. People like to collect the fruits to eat, but this “crowder” is out of place in Hawaiian forests.

Hint: Look for its smooth light brown bark.



Your hale (house) needs another support to keep it strong. Find the ‘ōhi‘a tree that is cut for posts.

Hint: Look near the 6th bridge for a tree with tiny leaves. It may not be in flower.

Did you know? This is often the first tree to grow on a cooled lava flow; its blossoms are sacred to the volcano goddess, Pele.



Your hula hālau is gathering ferns to make kūpe‘e for your wrists and ankles. Find the pala‘ā fern that can be used for this purpose. **Hint:** This beautiful fern has lacy leaves.

Did you know? The spores of ferns are easily spread on the wind.

