

DESCRIPTION

Students will discuss the significant role of 'ulu (breadfruit) as a food crop with a variety of other important uses, and the Hawaiian value, laulima. They will care for their kalo and 'uala gardens and prepare for the 'ulu tree planting. All participating classes will come together to plant and dedicate their 'ulu tree.

TIME: 35 minute Lesson; 25 minute 'Ulu Tree Planting, Dedication, Snack (all participating classes)
SUBJECTS: Health, Language Arts, Social Studies

LEARNING OBJECTIVES

After this lesson students will be able to:

- Discuss the role and significance of 'ulu in Hawaiian culture and around the world.
- Treat their garden, plants, tools, self, and others with respect.
- Practice proper care for their school's 'ulu tree.

ACADEMIC STANDARDS*

CCSS, Language Arts:

4.RL.2, 4.RL.3, 4.RL.4, 4.W.1, 4.W.3, 4.W.7, 4.W.8, 4.W.10, 4.SL.1, 4.SL.4, 4.SL.5

HCPS III: HE.3-5.1.1, HE.3-5.1.2, HE.3-5.1.3, HE.3-5.5.1, HE.3-5.5.2, SS.4.1.1, SS.4.3.1, SS.4.3.2, SS.4.3.3, SS.4.3.10, SS.4.6.1, SS.4.6.3

NGSS: Patterns, Systems and System Models

*A detailed list of the Academic Standards can be found in the Unit Overview document

LESSON OUTLINE

I. Introduction (15 minutes)

1. Protocol
2. 'Ulu Discussion
3. Planting Instructions
4. Group Activities Overview

II. Group Activities (30 minutes)

1. 'Ulu Planting Preparation
2. Kalo and 'Ula Care
3. Ti Leaf Plates

III. Closing (5 minutes)

- IV. 'Ulu Tree Planting, Dedication, Snack (20 minutes)
1. Steamed 'Ulu



KEY TERMS AND CONCEPTS

Ho'okupu - Offering

Kumulā'au or Lā'au - Tree

Laulima - Cooperation, to work together

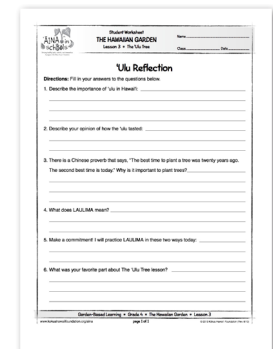
Mahi'ai - Farmer

Ulu - To grow, increase, spread

'Ulu - Hawaiian word for breadfruit



Background Information: 'Ulu



Student Worksheet: 'Ulu Reflection

LESSON MATERIALS

Community Supplies:

- Vermicast (about 3 cups)

Lesson Supplies:

- 'Ulu Tree Planting Sign
- 'Ulu Mo'olelo Sign
- Garden Agreements Sign
- Potted 'ulu tree (1 per school)
- Student Workbook

Teaching Team To Provide:

- Sign making materials (e.g., wooden sign and post, paints, brushes; or cement, mold, decorative stones or tiles)
- 5 to 6 large ti leaves per class

School To Provide:

- Garden Journals if not using Student Workbooks
- Garden gloves (1 pair per student, if needed)
- 2 shovels
- Wheelbarrow
- 6+ weeding tools
- 2+ garden hoes
- Compost (about 1/2 bucket full)
- Mulch (about 1 wheelbarrow full)
- Buckets and cups for watering, mulch, and snack waste

STEAMED 'ULU RECIPE

1. If 'ulu are freshly harvested, place them upside down (on stem end) outside for 1-2 hours to drain the sap.
2. Rinse off the 'ulu. Cut the 'ulu into quarters or eighths. Cut away the inner core.
3. Steam the pieces (with skin on) until they are soft and can easily be pierced with a fork (about 15 to 20 minutes for large pieces).
4. Remove from pot and allow to cool. Remove skin if desired.
5. Cut into bite-sized pieces.
6. Serve plain or with any desired toppings (e.g., salt, garlic butter, dressing)

ACCOMPANYING DOCUMENTS

- Background Information: 'Ulu
- 'Ulu Mo'olelo Sign
- Guided Notes
- 'Ulu Tree Planting Sign
- Student Worksheet: 'Ulu Reflection

ADVANCE PREPARATION

- Discuss lesson preparation and presentation plans with your teaching team.
- Review the 'Ulu Background Information and 'Ulu Mo'olelo Sign in preparation for the 'ulu discussion with students.
- Make copies of the Student Worksheet, one per student if not using the Student Workbook.
- Work with participating classes and the school's Garden Team to select and receive approval for a planting site, and to establish a plan for long term care of the tree (watering, mulching, pruning, harvesting, composting of fallen leaves and fruits).
- Have students create a permanent sign for the tree, including the Hawaiian, English, and scientific names, including specific variety, planting date, Hawaiian saying, etc.
- Plan with all participating classes regarding the dedication ceremony (see 'Ulu Tree Planting, Dedication, and Snack section for details). Have students prepare oli (chants), mele (songs), and ho'okupu (offerings). Optional: Have each class write a song or story about the tree. Invite guests to attend and participate (e.g., story tellers, performers).
- Harvest or purchase and prepare (see 'Ulu Recipe) the 'ulu for the snack.
- Harvest and clean ti leaves for ti leaf plates.
- Have students practice E Hō Mai.
- Have students ready to take notes in their Student Workbooks or Garden Journals

INTRODUCTION

15 MINUTES

PROTOCOL

Have students stand tall and straight with their hands at their sides, focus their thoughts on the present moment, take a deep breath, and offer their oli (chant), E Hō Mai, three times. Have students be seated.

'ULU DISCUSSION

During the following discussion, write key terms on the board and have students take notes in their journals. "Today we are going to plant and care for our school's 'ulu tree. As MAHI'AI (farmers) we will also care for our kalo and 'uala gardens." Ask students to share some of the observations they have made in the garden since the last lesson, including those recorded in their Student Workbooks or Garden Journals (or the Class Journal).

"ULU (no 'okina) in Hawaiian means to grow, increase, or spread. 'ULU (with 'okina) is the Hawaiian word for breadfruit. The 'ulu tree is a very strong and productive tree that produces a lot of food! The Hawaiian word for tree is KUMULĀ'AU or LĀ'AU."

Ask students: "What do you know or want to know about 'ulu?" Use the Background Information to help verify student knowledge and answer student questions. Spend about 5 to 7 minutes on this discussion. Refer to the 'Ulu Mo'olelo Sign for a story about the cultural significance of 'ulu.

PLANTING INSTRUCTIONS

"When we plant a tree, is it important to take our time and do it right? Yes! The ground that we prepare will be the tree's home for life and the time we take to plant it properly will give it the best start possible. It is very important that we take our time and give 100% of our focus, attention, and care when planting our tree."



'Ulu Tree Planting Sign

Use the 'Ulu Tree Planting Sign to illustrate the correct planting methods:

- Size of the planting hole must be the same depth as the soil inside the container that the tree is in and twice as wide as the container.
- Berm of soil and mulch (e.g., wood chips, 4 to 6 inches deep) should be "doughnut-shaped" and located at the tree's drip line (the farthest reach of its leaves). Mulch should not come in contact with the trunk.
- Add compost and vermicast to the soil in the planting hole and fill the planting hole with water and allow it to drain completely before planting.

The following tasks will take place during the Group Activities: 'Ulu Planting Preparation section (see section for details), and may be assigned to different classes according to the number of participating classes: 1) Remove Weeds, 2) Dig the Planting Hole, 3) Add Compost, 4) Add Vermicast, 5) Add Water, 6) Create Berm.

The following tasks will take place during the 'Ulu Tree Planting, Dedication, and Snack section (see section for details), and may be assigned to different classes according to the number of participating classes: 1) Plant the Tree, 2) Add Mulch, 3) Add Water.

GROUP ACTIVITIES OVERVIEW

"Today in the garden we are going to care for our kalo and 'uala plants and prepare for the planting of our school's 'ulu tree. We also need two volunteers to make ti leaf plates for the snack. Then all participating classes will come together to plant and dedicate the 'ulu tree and enjoy a healthy snack together. The dedication ceremony will happen each year as a reminder of the importance of this tree to our school and community, and of our duty to care for it. During the dedication ceremony we will also give our tree the HO'OKUPU (offerings) that we have prepared as a special way to thank our tree for all the wonderful gifts it provides!"

INTRODUCTION

CONTINUED

Hawaiian Values and Garden Agreements

"Our Hawaiian value for today is LAULIMA, which means cooperation and to work together." Have students repeat the Hawaiian value and share examples of how they will practice LAULIMA in the gardens today.



"Our Garden Agreements will also help to guide us in practicing LAULIMA." Have students take a deep breath, then review the Garden Agreements:

- I will be SAFE
- I will be KIND
- I will have an OPEN MIND
- I will use my TIME WELL



Divide the students into three groups and select the two ti leaf plate volunteers before going outside.

GROUP ACTIVITIES

15 MINUTES

If the class knows an oli (chant), please have them offer it before entering the garden to work. During the Group Activities, help students to practice LAULIMA.

Students will work in their groups for the entire 15 minutes without switching. Assign one adult to oversee each group.

'ULU PLANTING PREPARATION (15 minutes)

The following tasks may be assigned to different classes according to the number of participating classes:

1. **Remove Weeds:** Use the weeding tools to remove weeds and grasses from the planting area (a circle of about 3 feet in diameter), which would compete with the tree roots for water and nutrients.
2. **Dig the Planting Hole:** The size of the planting hole must be the same depth as the soil inside the container and twice as wide as the container that the tree is in. The soil levels inside and outside of the container should be the same (so that the tree is not planted too shallow or too deep).

3. **Add Compost:** Mix about 1/2 bucket compost into the soil at the bottom of the planting hole.
4. **Add Vermicast:** Mix about 3 cups vermicast into the soil at the bottom of the planting hole.
5. **Add Water:** Fill the planting hole with water and allow the water to soak into the ground before the tree is planted. This will encourage the roots to grow downward and deep instead of shallow at the surface (due to light watering).
6. **Create Berm:** Have students use the garden hoes to create a low circular berm of soil around the tree, about 2 feet away from the trunk on all sides (or further away for a large tree), to contain the water that is given to the tree so that it filters down to the roots and does not run off away from the tree.



GROUP ACTIVITIES

CONTINUED

KALO CARE (15 minutes)

Students will work in their kalo garden to weed, water, and feed the soil with vermicast. Bare soil may be covered with organic mulch to protect it from the sun. Have the students observe the health of their plants and garden soil.

'UALA CARE (15 minutes)

Students will work in their 'uala garden to weed, water, and feed the soil with vermicast. Bare soil may be covered with organic mulch to protect it from the sun. If 'uala vines are "running" (vines extend outside of the garden bed), have students wrap or fold the vines back into the garden bed (having the plant growth concentrated in the garden bed will help focus the plant's energy on root growth instead of vines). Have the students observe the health of their plants and garden soil.

TI LEAF PLATES

Have the two student volunteers wash their hands thoroughly with soap and water, then prepare the ti leaf plates for the snack by using clean scissors to cut each large ti leaf into about 4 plates (about 4"x4" section or larger). Make sure there is one plate for each student and adult present and that the plates are kept clean. These students may join the other group activities when finished with their task.

All students must wash their hands thoroughly with soap and water after working in the gardens and before eating their snack.



CLOSING

5 MINUTES

Gather all the students in the garden. Have each group share how their team members practiced LAULIMA while caring for the kalo, 'uala, and 'ulu, and making the ti leaf plates. Review the plan for the upcoming planting and dedication of the school's 'ulu tree.

Remind students that each of them has an important role in planting and caring for their 'ulu tree. Remind students that it is very important to take their time and give 100% of their focus, attention, and care when planting the 'ulu tree.



'ULU TREE PLANTING, DEDICATION, AND SNACK

15 MINUTES

Have students from all participating classes gather together around the 'ulu tree.

Any of the following activities may take place during the dedication ceremony:

1. Have students perform mele, oli, hula dances, and/or share their song or story (see Advance Preparation).
2. Tell a mo'olelo about the 'ulu tree, and/or have guests perform.
3. Other activities planned by the participating classes.

Planting Instructions:

1. **Plant the Tree:** Gently remove the 'ulu tree from its pot (do not pull it out by the trunk) and place it in the planting hole. Be sure that the tree is completely upright and that the soil levels match exactly (the tree should not be planted too deep or too shallow). Gently fill in the soil around the roots until it is level.
2. **Add Mulch:** Place a 4" to 6" deep layer of mulch around the tree (to a distance of about a 2 foot radius from the trunk), and be sure that the mulch does not touch the trunk (give the trunk about a 2 inch radius of breathing room).
3. **Add Water:** Water the tree thoroughly, making sure the water stays within the berm and soaks down into the soil (instead of running off away from the tree).
4. **Sign:** Place the sign (see Advance Preparation) at the base of the tree.
5. **Ho'okupu:** Have students place their HO'OKUPU (see Advance Preparation) at the base of the tree.



All students must wash their hands thoroughly with soap and water after planting their 'ulu tree and before enjoying the snack.

Have students share what they are thankful for before enjoying the snack. Give a ti leaf plate to each student. Place one or more cooked pieces of 'ulu onto each student's ti leaf plate.

Have students place snack waste and ti leaves in a bucket and then add it to the school's compost pile when finished.

"Please continue to take good care of your gardens and your 'ulu tree and make sure to visit them every day to water the soil, make observations, and record them in your journals (or the Class Journal). Remember, you are the MAHI'AI (farmers) responsible for these plants that will provide us with food!"



FOLLOW UP GARDEN CARE

Follow Up Garden Care is the responsibility of the classroom teacher and students.

- Continue to have Garden Monitors visit the gardens every day in order to water the soil, make observations, and record them in their journals, or a Class Journal. Thoroughly water the ‘ulu tree at least once a week until well established, and during dry periods. Install irrigation if necessary. Have the Garden Monitors share their observations with the class. Rotate the Garden Monitors each day or week.
- Remove weeds from in and around the gardens and around the base of the ‘ulu tree.
- Students must wash their hands thoroughly with soap and water after working in the garden.



FOLLOW UP ACTIVITIES

Follow Up Activities are the responsibility of the classroom teacher.

- Have students complete the ‘Ulu Reflection Student Worksheet.
- Have students make daily or weekly garden observations and journal entries including notes, drawings, poems, stories, etc.
- Discuss with students the significance of their ‘ulu tree. If the tree is young it may not provide food this year, but it will provide a great deal of food for years to come.
- Discuss the significance of providing sources of healthy living foods in our communities.



LESSON EXTENSIONS

The Legend of the First 'Ulu Tree

(4.RL.2, 4.RL.3, 4.RL.4, 4.W.7)

1. Read and discuss the book *No Ke Kumu 'Ulu / The 'Ulu Tree* by Kawehi Avelino with students. Have them write a book report including their own illustrations.
2. Have students research other creation stories for various plants and animals, or have them create their own.

The Importance of Trees and Forests

(4.W.7, 4.SL.4)

1. Review and discuss the following “Ōlelo No’eau” (Hawaiian saying) with students: “Hahai no ka ua i ka ulu la’au.” The rain follows the forest. Plant trees to protect the watershed, our source of life in these islands.
2. Have students research and report on the uniqueness and importance of native Hawaiian forests and the threats that they face (including over-development and invasive species).



We All Live In A Watershed!

(4.W.7, 4.SL.4, 4.SL.5)

1. A watershed is an ahupua’a, an area of land, such as a mountain or valley, which collects rainwater into a common outlet, such as the ocean.
2. Have students visit the Hawai’i Association of Watershed Partnerships website, www.hawp.org, to learn more about watersheds and the Ko’olau and Wai’anae Mountains Watershed Partnerships on O’ahu.
3. Discuss the fact that our lives depend on the health of our native forests and watersheds because they provide us with life-giving water, ka wai ola.
4. Take students on a hike in your school’s local watershed, enabling a first-hand experience of this important aspect of their lives.
5. Have students work in groups to draw maps and/or make models of their local watershed and learn the names and locations of local mountains, streams, and rivers. Have the groups share their work with the class.
6. Watch *The Rain Follows the Forest* movie, created by the Hawai’i Department of Land and Natural Resources (DLNR) for free on YouTube: www.youtube.com/TheHawaiiDLNR/videos. Have students write a journal entry including their opinion of the movie and any reflections on the topic.
7. Other resources related to the movie include:
 - “The Rain Follows the Forest” lesson plan is available online here: www.dlnr.hawaii.gov/rain/files/2014/02/The-Rain-Follows-the-Forest.pdf
 - Additional student resources can be downloaded from: www.dlnr.hawaii.gov/dofaw/kids/