UNIT 3
Early Hawaiian Fishponds

"A Hawaiian fishpond is like an ancient guardian who keeps the food."

Kaipo Caparida, Grade 4
Kilohana School, Moloka'i
Early Hawaiian Fishponds

"O ka na‘auao o nā kāpuna ka lama e ho‘omālamalama i ke ala no nā keiki. - The wisdom of the elders is the torch that enlightens the path of the children."
Gary Kahahō‘omalu Kanada (1998)

Early Hawaiians were keen observers of ocean currents and tides. Using the ocean swells to help navigate their canoes, they embarked on long journeys across the Pacific. For sport, they rode the waves on their surfboards. As fishers, they were alert to every movement in the ocean water and could predict a change in the seasons.

The art of fishing was passed down from generation to generation. Having observed the natural talents of any particular child, ka po'e kahiko (the people of old) would seek established scholars familiar with the child's interest to pass on knowledge. Over a period of many years, some say 20 years, of apprenticeship, the oral history or skill was passed from one generation to another. Children of fishers or farmers or canoe makers would be expected to learn the skills needed to excel in a certain area of expertise.

So vast was the fishers' knowledge of the natural environment that their observations led to the development of a variety of fishing methods and fishing implements, and eventually to sophisticated engineering involved in growing fish in different types of fishponds and fishtraps.

Early Fishing Methods

One of the earliest and simplest methods of catching fish was by hand. “Men and women would grope in holes or crevices that were likely habitats, grasp the fish, and put them into bags strung around their waist” (Wyban, 1992). Other methods included prodding in crevices with a stick, ensnaring between the fingers, striking with loose stones, or using plant compounds to drug the fish. In the mountain streams, dams were built to block the flow of water. The maka'ainana would stamp the waters, disturbing the sediment below, which forced the 'o'opu (goby) fish to surface for air (Wyban, 1992). This made it easier to catch and bag the 'o'opu.

But these methods were not considered expert ways of fishing. “They were just for the taking of fish to make living more pleasurable – to have something for the family and guests to eat with poi” (Kamakau, 1976). Far superior were methods of diving for fish and fishing with long lines. To acquire the proper equipment for ocean fishing, the fisher had to be recognized as a true fisher. Not everyone held this distinction. "If (he) were a landholder or chief, or a descendant of a
fisherman, or a son in a family which had 'aumakua (a family god) of fishing, then he could be a true fisherman with no lack of long canoes, short canoes, light, swift canoes, large and small nets, and long and short fishing" (Kamakau, 1976).

There were many methods of fishing. Spear fishing, which was commonly done under water, required the fisher to aim in front of the fish to hit it when it moved forward. Other methods employed fish lines, fishhooks and fish lures. Various types of nets were used to catch specific kinds of fish. Mesh nets, dip nets, gill nets, seines and bag nets were commonly used. Portable fishtraps made from vines and cordage and fashioned into basket, funnel and cylindrical shapes were used to catch fish in fresh water as well as salt water (Wyban, 1992).

Sustainable Practices

The early Hawaiians practiced sustainable farming and aquaculture because their very existence depended upon it. The elders taught that whatever was taken from the land or sea, a gift had to be given in return. They were taught to only harvest what was needed from the mountains and the sea, for example, to harvest ferns and limu without damaging the roots and shoots so that growth of the plants would continue, to return fish with eggs to the sea, and to leave large 'opihiki so that they could spawn. Strict kapu (taboo) were placed on catching of certain fish during their periods of reproduction.

Growing Fish

The evolution from catching fish to growing fish was a joint effort between the farmer and the fisher. On land, the farmer was responsible for the irrigation system of his lo'i kalo (taro patches). "The original concept of the mākahā may have been developed in the agricultural irrigated taro plots, where rudimentary mākahā of smaller scale occur to control water flow into plots" (Kikuchi, 1973). While in the ocean, the fisher observed the ocean current and tides and the movement of fish and implemented techniques to catch his food. The combined knowledge of the farmer and fisher led to the development of the sophisticated technological system of the mākahā. The mākahā was a stationary grate placed into an opening or canal ('auwai kai) that was built into the wall of the loko kuapa.

When the stone walls of the kuapa shore ponds were completed, then the task remained to find the proper wood for the sluice gate, the mākahā. This was selected by the kahuna of the 'aumakua who increased fish in the ponds (kahuna 'aumakua ho'oulu i'a loko kuapa). The wood was 'ōhi'a 'ai or lama or some other suitable wood. When the wood for the mākahā was ready, and the proper day had arrived for its construction, the kahuna was fetched to set up the first piece of timber. For this important duty he offered a pig or a dog suitable to this work of inspiring the increase of fish, and prayers appropriate to this work. Then he reached for a timber and set it up for the mākahā and offered the pule ho'ona [the prayer that released the kapu and allowed the work to proceed]. Then the men built the mākahā, binding it together with 'ie cords [aerial root of the 'ie'e plant]. After that they arranged (ho'ohonohono) foundation stones with the mākahā and poured in pebbles. It was in this way that all mākahā were made.

-Kamakau (1869)
The mākāhā most likely allowed the Hawaiians to progress from fishtraps, in which all lanes were open to the sea, to enclosed shore fishponds where access into and out of the pond could be controlled. It was a significant innovation used to circulate water, and it also allowed small fish to enter the fishpond. When the young fish in the pond grew larger than one half inch thick, they could no longer escape to the open ocean through the slits in the grate. Fish could be harvested from the pond as they gathered at the mākāhā during changes in the tide. During the nights of a full moon and high tide when the fish would pour into the sluice, a kia‘i loko (pond keeper) was posted near the sluice to guard against ‘four footed and two footed’ thieves (Handy et al., 1972). The more mature fish could easily be caught by hand.

Once the mākāhā had been introduced, the process of stocking the pond required not nearly as much effort as fishing. One way the early Hawaiian managed to stock the pond was to offer ceremonial prayers and when the moon was full and the tide high, the fish, attracted by the inflow, would appear. In some fishponds, Hawaiians fed the fish sweet potatoes, taro and breadfruit so that they would not only grow fat, but also get used to coming to the edge of the pond for food. When it was time to catch a fish, it was easy, since the fish would be accustomed to gathering near the wall to be fed.

“The leap from catching fish to growing fish underscores the ability of the Hawaiians to integrate all aspects of fish life cycles, behavior, and feeding habits with geology, engineering, and hydrology to create a new form of food production” (Wyban, 1992). The system evolved over years and the mākāhā became not only the means of stocking and harvesting, but also a way to maintain water quality and long-term food production.

The activities in this unit help students to explore how fishing evolved in Hawai‘i from catching to growing fish, the ingenuity involved in fishpond engineering, and what traditional practices can teach us about values that are important in Hawaiian culture.

References


The Kū stone represented Kū'ulakai, the god of fishing.
It was usually placed on the eastern side of the fishpond.
<table>
<thead>
<tr>
<th>Students:</th>
<th>Activity:</th>
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<tbody>
<tr>
<td>What evolved from cooking to farming?</td>
<td>Hawaiians ate fish, plants, and seeds. They grew sweet potatoes. It is now a tradition.</td>
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**Cultural Practices:**

- **What Can Traditional Practices Do:**
  - Honor the Aloha
  - How do practices support culture?

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## Unit 3 Culminating Activity

Students write a story or mo'olelo about a fishpond from the point of view of a maka‘ainana (commoner) or ali‘i (chief) in early Hawai‘i. Their stories describe the beliefs and values that were evident in behaviors and how the fishpond:

- increased food production,
- affected them and the people around them, and
- affected the environment.

## Sample Rubric for Culminating Activity

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<tbody>
<tr>
<td>Social Studies: Cultural Systems</td>
<td>Writing clearly describes some of the beliefs and values from the point of view of an ali‘i or commoner in early Hawai‘i. Writing examines more than one point of view to show how values are reflected in behaviors.</td>
<td>Writing clearly describes some of the beliefs and values from the point of view of an ali‘i or commoner in early Hawai‘i. Writing examines more than one point of view to show how values are reflected in behaviors.</td>
<td>Writing needs more examples to describe the beliefs and values from the point of view of an ali‘i or commoner in early Hawai‘i. Writing examines more than one point of view to show how values are reflected in behaviors.</td>
<td>Writing does not describe beliefs and values from the point of view of an ali‘i or commoner in early Hawai‘i. Writing examines more than one point of view to show how values are reflected in behaviors.</td>
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### Points

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<tr>
<th>Performance Indicators</th>
<th>Writing presents multiple ideas to describe how the fishpond increased food production and how it affected people and the environment. Content goes beyond facts and details to develop ideas; shows critical thinking.</th>
<th>Writing clearly describes how the fishpond increased food production and how it affected people and the environment.</th>
<th>Writing needs more information and focus to clearly describe how the fishpond increased food production or how it affected people and the environment.</th>
<th>Writing needs more information and/or accurate information.</th>
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I NOTICED:
Engineering Ingenuity

How did Hawaiians engineer shoreline fishponds to grow fish, while maintaining water quality and preventing siltation?

Hawai‘i DOE Content Standard

Science: Mālama I Ka ‘Āina:
• Students make decisions needed to sustain life on Earth now and for future generations by considering the limited resources and fragile environmental conditions.

Grades 4 - 5 Performance Indicators

Grade 4
• Identify agricultural methods used in Hawai‘i to increase food production and their impact on humans and the environment.

Grade 5
• Explore how agricultural technology affects humans and the environment.

Key Concepts

• Hawaiians constructed ‘auwai kai (channels) in the walls of shoreline fishponds to create currents that circulated water and attracted fish with each tidal change. They placed mākāhā (sluice grates) in the ‘auwai kai to trap fish.
• The circulation of water in the pond aerates the pond with oxygen and flushes out excess sediments and nutrients that can accumulate to unhealthy levels.

Prerequisite

Unit 1, Loko I’a

Activity at a Glance

Students build model fishponds in shallow pans and experiment with changing water levels outside the pond wall to simulate what happens with the rising and falling tides.

Time
1 - 2 class periods

Skills
modeling, reasoning, interpreting

Assessment

• Students sketch a loko kuapā, and diagram how the flow of water through the mākāhā at both rising and falling tides affects water quality and pond life.

The impressive fishpond walls we see today were built by thousands of workers passing stones from hand to hand.
Vocabulary
loko kuapā – seawater fishpond with rock walls built on reef flat
‘auwai kai – ditch or small canal, sluice connecting the fishpond to the sea
ingenuity - cleverness or skillfulness of conception or design
mākahā – sluice grate or gate
nutrient – matter that sustains a living organism and promotes growth
nutrient flushing – the washing away of nutrients
circulation – the moving or flowing of something from place to place or in a circle
siltation – to become filled or choked with silt
stagnation – to become stale or foul from standing, as a pool of water

Materials
Per group of students:
• disposable aluminum roasting pan or shallow plastic dishpan
• 1 block modeling clay
• toothpicks or popsicle sticks
• florist wire that can be cut with scissors
• 2 cups clear water
• 2 cups water, colored blue
• empty 2-liter soda bottle or other container for water
• 2 - 3 feet of flexible tubing or meat baster
• yellow food coloring
• 15 small leaves (to represent large fish)
• oregano or other spice (to represent small fish)

Background
The tidal changes that occur each day are controlled by the gravitational pull of the sun and the moon on the oceans. Our knowledge has evolved to the point where we can now predict when and even how high or low the tide will be for any given day of the year, and we can access that information by simply looking at a tide calendar. During ancient times, the exact mechanism of tidal fluxes may not have been fully understood. However, ancient Hawaiians knew that the ebb and flow of the seas were correlated with the phases of the moon around which they planned much of their daily activities related to planting crops and fishing.

The shoreline fishponds (loko kuapā and loko pu‘uone) and fishtrap (loko ‘ume iki) were intimately linked with the changing of the tides. Coupled with the knowledge that most fishes are attracted to currents, ‘auwai kai (sluice or channels) were constructed in the walls of the ponds and fishtraps to create currents with each tidal change. In this manner, fish could be harvested from either within the pond or from the ocean depending on which direction the current flowed as the tide changed.

The fishpond mākahā (sluice grate) and pond walls were designed to allow water circulation from the tides. They functioned like a “filter” to help control water circulation and prevent stagnation and the build-up of sediments, which is critical to maintaining a healthy, balanced fishpond ecosystem.

The shallow depth of Hawaiian fishponds provided the optimal light conditions for plankton and limu growth. Limu and microscopic plankton provide food for the herbivorous fish grown in the pond—the ‘ama‘ama (mullet) and awa (milkfish). The kia‘i loko (fishpond keeper) cared for the pond, just as a farmer tends his pastures for cattle. The kia‘i kept the pond walls intact and
checked for excessive limu growth and build-up of pond sediments. If the mats of limu in the pond grew too thick, the limu was thinned by hand. This helped to prevent the depletion of dissolved oxygen in the pond which occurs when large amounts of limu decays. And if the bottom sediments of soil and decayed organic matter got too thick, commoners were called upon to help clear this layer of sediment. The sediments were stirred up and the pond was flushed as the incoming tide circulated in the pond through the mākāhā, and the outgoing tide washed some of the sediment out to sea.

The ancient ‘auwai kai with mākāhā did not have the movable water gates that appeared at the turn of the twentieth century. So the location of the different mākāhā in the early ponds was critical to water circulation. Later, the Chinese and Japanese introduced separate water gates on the ocean side of the mākāhā that allowed them to cut down the rate of water exchange and manipulate the plankton density by closing the gates. As with an aquarium of guppies that lacks filtration, unincirculated fishpond water will start to turn green in a few days, when the phytoplankton grow due to the nutrients (excrement/fertilizer) that build up.

Teaching Suggestions

1. Display a picture of the loko kuapā (from Unit 1, Loko ʻIʻa activity) and ask students to describe how the pond functions. If students have not seen the Kāhea Loko introductory video, have them view it before conducting this activity.

Discussion Questions

- What is the purpose of the ‘auwai kai (sluice or channel in the wall) and the mākāhā (sluice grate)?

  (The ‘auwai kai provides a current that attracts fish and during the incoming tide, it allows water to flow into the pond and circulate. During the outgoing tide, the sediments can be flushed out of the pond. The mākāhā, placed between the walls of the ‘auwai kai traps the fish in the pond.)

- How was it easier to catch fish from a pond than in the open ocean?

  (Fish can be caught easily from a fishpond because the fish are concentrated into a confined area, unlike in the open ocean where the fish are widely dispersed. The fish tend to gather by the ‘auwai kai to swim in the current that is created by the tides flowing through the channel. The fish can be scooped with nets at this location.)

2. Divide the class into groups of “agricultural engineers.” Explain to students that a prospective client, Kupuna Kole, is searching for an engineering firm to rebuild her fishpond. The fishpond has not been in use since her father passed away. It is 10 acres large and the pond is filling in with silt that is washed down from the stream that feeds into the pond. She has also been told that the water is becoming stagnant because nutrients are building up and depleting the oxygen in the water. The walls and the mākāhā have fallen apart and she needs to have the pond rebuilt. Kupuna Kole is requesting that each engineering firm present its model and show how the pond will work to circulate water once again and allow the young fish to enter, but the bigger fish to be trapped.
3. Challenge each group of engineers to design and build a kuapā with an ‘auwai kai and a mākāhā. Give each group a pan to build the pond and have students select materials from those provided or acquire additional materials to fit their designs.

4. Once students’ ponds are built, give each group two cups of water to add to the pan as low tide. After the water has equalized on both sides of the mākāhā, ask each group to add a few drops of yellow food coloring to the pond side of the model to represent the stagnant water in Kupuna Kole’s pond.

5. Give each group a container with two cups of blue-colored water and a meat baster. Ask students to raise and lower the “tide” on the ocean side of their models and report what happens to the stagnant water in their ponds.

6. Provide some small leaves or other lightweight objects to represent large fish and some oregano to represent small fish. Have students add these “fish” to their ponds and create a current to move the fish toward the mākāhā. Do their mākāhā prevent the large fish from escaping? Explain that the adult fish are drawn to the mākāhā on the incoming tide and will actually swim against the current.

7. Ask groups to present their models for Kupuna Kole and describe how their models will work to: a) circulate the water and prevent stagnation, and b) allow small fish to enter and big fish to be retained.

8. Ask students to complete the assessment activity. Have students work individually to create diagrams showing how the circulating water with the changing tide affects water quality and pond life.

Discussion Questions

- Why are tidal fluctuations important to a fishpond?  
  (They circulate the water between the ocean and the pond, aerating the pond and removing wastes.)

- How would cementing the rocks of the fishpond wall in place affect the pond?  
  (It would keep water from seeping through the walls of the pond, so the only place where the water could circulate and flush nutrients would be through the ‘auwai kai. This could negatively affect water quality in the pond.)

- How are your models different from a real situation?  
  (As always, models are simplified representations of reality. With a real fishpond, you would have the effects of wind and waves on the water and human activities upstream as well as the changing tides.)

Adaptations/Extensions

- Follow this activity with a field trip to a fishpond, and have the students observe the flow of water through the ‘auwai kai. Using small floating objects and a stopwatch, have students calculate the flow rate of the water into or out of the pond.

- Re-visit the K-W-L chart created in Unit 1.
Catch It! Grow It!

• Why and how did Hawaiian fishing technology change from catching fish to growing fish?

Hawaiʻi DOE Content Standard

Science: Mālama I Ka ʻĀina
- Students make decisions needed to sustain life on Earth now and for future generations by considering the limited resources and fragile environmental conditions.

Grades 4-5 Performance Indicators

Grade 4
- Identify agricultural methods used in Hawaiʻi to increase food production and their impact on humans and the environment.

Grade 5
- Explore how agricultural technology affects humans and the environment.

Key Concept
- Fishing methods evolved in Hawaiʻi from early techniques of catching fish to the later engineering involved in developing fishponds and growing fish.

Prerequisite

Engineering Ingenuity

Activity at a Glance

Students read a story and role play to demonstrate the different methods of catching fish in old Hawaiʻi. Students develop an ending for the story and illustrate what they have learned about the evolution of fishing technology.

Time

2 - 3 class periods

Skills

reading comprehension, drawing, reasoning, writing
Assessment

Students:
• Write a conclusion to the story “The Old White ‘Ama’ama Fish.”
• Illustrate how fishing technology evolved from catching to growing fish.

Vocabulary
mākāhā – sluice gate or grate
melomelo – stick or club used as a lure, rubbed or wiped with roasted coconut or kukui nut flesh or aromatic leaves
‘ama’ama – mullet
‘umeke – gourd

Materials
Provided:
• “Old White ‘Ama’ama Fish” story
• scenes from the story

Advance Preparation
Make two copies of the section labeled “Scenes.” Fold over several times and place in a container.

Teaching Suggestions

1. Read the “Old White ‘Ama’ama Fish” story to the class or have students take turns reading parts of the story aloud.

2. Ask students to identify the three different methods of fishing in the story and list the methods on the board:
   • A basket made of ‘ie (aerial root of ‘ie‘ie plant) stocked with vegetables
   • A stick scented with coconut and kukui nut meat used as bait while fishers surrounded the school of fish with a net
   • A human hand holding bait to lure fish while the other hand caught the fish

3. Divide the class into four or five groups of students and have a member from each group draw a scene card from the container.

4. Taking turns, have each group role play a scene to the entire class using only hand and body motions – no speaking allowed. (There may be a duplication of scenes but this will reinforce fishing methods.)
5. Ask students to guess the fishing method demonstrated by each group and continue role playing until each group has had a turn.

6. Discuss the story and the fishing methods with students.

**Discussion Questions**

- Why did early Hawaiians move from catching to growing fish?

  (*Ocean fishing was very dangerous, time-consuming and depended a great deal on weather conditions. It took less energy to fish from a pond and weather was less of a factor. When bad weather persisted, commoners often relied on their store of dried fish. Since it was the ali‘i that commanded the building of fishponds, his desire to have fresh fish of many different species whenever he wanted could be fulfilled.*)

- Why were fishponds built?

  (*It was much easier to grow fish in a contained area than to fish in the open ocean. The loko kuapā were built exclusively for the ali‘i. Other types of fishponds and fishtraps could be used by the common people, as permitted by the ali‘i.*)

7. After the discussion, ask students to complete the “Old White ‘Ama‘ama Fish” story. Have each student address the following questions in his/her ending to the story:

- What happened to Tūtū?
- What happened to Kea?
- Did the fishpond keep them safe from predators? Why or why not?
- What could you invent for the fishpond that would keep fish contained?

**Adaptations/Extensions**

- Research various kinds of fishing methods. Challenge students to recreate fishing tools.

- Have students interview a kupuna (grandparent) who can share fishing stories and experiences. Produce a book authored and illustrated by students.

- Re-visit the K-W-L chart created in Unit 1 and have students add new questions and concepts they have learned.
The Old White ‘Ama‘ama Fish

Relaxing in a crevice in the loko kuapā (fishpond), the old white ‘ama‘ama fish sat with his grandson. "Please, Tūtū, tell me the story about how you got to this fishpond," Kea begged.

“I’ve told you those stories so many times,” the old white ‘ama‘ama sighed. “I have extra wrinkles to prove it.”

“I don’t get tired hearing them over and over again,” Kea said.

“All right,” Tūtū agreed. “We have some time before your grandmother calls us to eat our limu (seaweed) dinner.”

Tūtū cleared his throat and began. “My brothers and sisters and I were born in the deep, deep blue ocean beyond the reef. We were so small that you could barely see us. We must have been no bigger than the dot on the letter i.

Before we began our journey to the fishpond, mom warned us to be very careful. There were many predators who would love to eat us for lunch! We agreed to look out for other fish we couldn’t trust. And thus began our adventure to the fishpond.

As we were being pushed on the surface of the water by gentle winds and ocean currents, we smelled something really awful! What was that smell and where was it coming from? I noticed that there was a canoe floating above us. It looked like the fishermen in the canoe had been there for several days. Their skin was caked with salt. And their lips were dry and cracked. Poor weather must have kept them from hauling in a catch."
All of a sudden, a huge basket made of 'ie (aerial roots of the 'ie'ie plant) began to slowly lift off the ocean floor. There were kala (surgeon fish) in the basket eating bits of sweet potato and limu. They were so fat and full from eating that they didn't try to escape from the basket.

The fisherman who was hoisting the basket took enough kala for himself and his family and returned the rest of the fish to the ocean unharmed. A few minutes later, my brothers and sisters and I smelled it, again. Wow! It was hauna (an unpleasant odor)! Then, I remembered what my dad had told me about kala. The kala fish eat a lot of limu. When they are caught, and their stomachs are cut open a real stinky smell rises – just like rotten eggs. My brothers and sisters blamed me for the stink smell. But I pretended not to hear them.

Another story I remember is about the melomelo stick. Fishermen use the stick, which is rubbed with coconut and kukui nut meat, to attract fish. They lower the stick into the ocean and when the fish begin to nibble on the end of it, the fishermen surround the fish and catch them with a net.

I remember after a huge storm a group of fishermen tried to surround a school of 'ōpelu (mackerel scad). For some reason, the stick got caught in the net and drifted to the bottom of the ocean floor. Meanwhile, the 'ōpelu followed the scent of the melomelo stick. The fishermen tried to go after the 'ōpelu, but they got tangled in their net and looked like a school of 'ōpelu struggling to get free.

My brothers and sisters and I laughed so hard that we almost popped a gill. I've heard that if you look real close at the 'ōpelu, you'll see that he has a permanent grin. Everyone says that the 'ōpelu are remembering the day when the fishermen looked like a bunch of silly fools tangled in their own nets.
One of my favorite stories is when I was nearing the end of my journey. There had been a huge hurricane the previous day. The tsunami had left marine life strewn along the sand.

Many humans were shore fishing. At that time, I was about two inches long – the size of a human pinky finger. I, too, was near the shoreline not too far off from the fishpond.

All of a sudden, a human hand descended into the water. In its hand was a baby squid. Within seconds, four baby eels peeped out of their hiding place. The human hand sat motionless in the water. The tentacles of the squid dangled between the fingers inviting the baby eels for a nibble.

As I got closer, I noticed the baby eels cautiously sneaking up on the hand to take a better look. In a split second, another hand snatched up the four baby eels and me along with them. All I remember is being yanked out of the ocean and thrown into an ‘umeke (gourd). There was no water in the gourd so I lay there gasping for air.

As I lay at the bottom twitching, a thumb and an index finger pinched my body and flung me into the air. I was soaring like a bird in the sky until I landed – smack – head first into the ocean. I hit the surface of the water so hard that I bruised my lips. If you look carefully at our ‘ama‘ama (mullet) relatives, you will see that we all have a faint color of red on our lips and gills. That’s how you know that we are all related.
As soon as I fell into the ocean, I turned toward the fishpond hoping to make my way to safety. But Māmā Pūhi (eel) had just come out of her hole looking for her kids, and she was angry. When I saw her, I knew I was in trouble. I tried to hide behind a patch of limu, but Māmā Pūhi found me. I was stuffed in a hole with nowhere to go. As she slithered towards me baring her sharp teeth, I searched for a way out. All of a sudden.......
Scene Card -1

A huge basket made of ‘ie (aerial roots of the ‘ie‘ie plant) slowly lifted off the ocean floor. There were kala (surgeon fish) in the basket eating bits of sweet potato and limu (seaweed). They were so fat and full from eating that they didn’t try to escape from the basket.

The fisherman who was hoisting the basket took enough kala for himself and his family and returned the rest of the fish to the ocean unharmed. A few minutes later, my brothers and sisters and I smelled it, again. Wow! It was hauna (an unpleasant odor)!

Then, I remembered what my dad had told me about kala. The kala fish eat a lot of limu. When they are caught, and their stomachs are cut open a real stinky smell rises – just like rotten eggs. My brothers and sisters blamed me for the stink smell. But I pretended not to hear them.
Scene Card - 2

Fishermen use the melomelo stick to attract fish. The stick is rubbed with coconut and kukui nut meat. Then it is lowered into the ocean. When the fish begin to nibble on the stick, the fishermen surround the fish and catch them with a net.

I remember after a huge storm a group of fishermen tried to surround a school of ‘ōpelu (mackerel scad). For some reason, the stick got caught in the net and drifted to the bottom of the ocean floor.

Meanwhile, the ‘ōpelu followed the scent of the melomelo stick. The fishermen tried to go after the ‘ōpelu, but they got tangled in their net and looked like a school of ‘ōpelu struggling to get free.
Scene Card - 3

All of a sudden, a human fist descended into the water. In its hand was a baby squid. Within seconds, four baby eels peeped out of their hiding place. The human hand sat motionless in the water. The tentacles of the squid dangled between the fingers inviting the baby eels for a nibble.

As I got closer, I noticed the baby eels cautiously sneaking up on the hand to take a better look. In a split second, another hand snatched up the four baby eels and me along with them. All I remember is being yanked out of the ocean and thrown into an ‘umeke (gourd). There was no water in the gourd so I lay there gasping for air.

As I lay at the bottom twitching, a thumb and an index finger pinched my body and flung me into the air. I was soaring like a bird in the sky until I landed – smack – head first into the ocean. I hit the surface of the water so hard that I bruised my lips. If you look carefully at our ‘ama’ama (mullet) relatives, you will see that we all have a faint color of red on our lips and gills. That’s how you know that we are all related.
Haku Mele Aloha:
Composing in Hawaiian

- What can traditional Hawaiian fishing practices, mo'olelo (stories), and mele (songs) teach us about values that are important in the Hawaiian culture?

Hawai'i DOE Content Standard

Social Studies: Cultural Systems:
- Students understand culture as a system of beliefs, knowledge and practices shared by a group.

Grades 4 - 5 Performance Indicator

- Interpret and/or illustrate how Hawaiian culture is composed of items (arts, artifacts), ideas (beliefs, values) and behaviors (observable practices that may or may not be related to values and beliefs).

Key Concepts

- Traditional fishing practices, oli (chants), and mo'olelo (stories) express values that are an important part of Hawaiian culture.
- Hawaiian values such as ho'ohihi (respect) for others and for the land, kuleana (responsibility) for maintaining a balance between self and society and between human beings and the rest of the universe, are expressed through various forms of protocol and mo'olelo.

Prerequisite

As a note, it is important for any teacher using this activity to consider the level of Hawaiian language use as very basic, and academically inclined in nature. Therefore, the author advises consultation with native speakers prior to adaptation of the activity, and caution in using the format outside of the way it is presented in this unit.

Activity at a Glance

Students read about traditional fishing practices and Hawaiian mo'olelo (story) and describe the values conveyed. Students compose a mele/song entirely in Hawaiian about a place in nature that is significant to them.

Time

3 class periods
Skills
writing composition, reflection

Assessment

Students:
- Write a description of what traditional fishing practices and a Hawaiian mo'olelo (story) reveal about early Hawaiian life and values.
- Compose and share a mele (song) that reveals what a special place in nature means to them.

Vocabulary
ko'a – shrine consisting of circular piles of coral or stone, built along the shore or by ponds or streams, used in ceremonies to make fish multiply; or fishing grounds, usually identified by lining up with marks on shore
oli – chant
mele – song
mo'olelo – story, legend, history, tradition
kuleana – responsibility
hō'īhi – respect
(additional words defined on student activity sheet)

Materials
Provided:
- activity sheets 1 & 2
- student reading - mo'olelo

Needed:
- Hawaiian music (preferably songs with nature themes)
- CD or tape player

Advance Preparation
Compose a mele (song) using the format provided with this activity as an example for students.

Background
Hawaiian culture lives through oral traditions that are passed on through mo'olelo, music, dance, oli and protocol that convey the beliefs, values, and behaviors important in the Hawaiian world view. Fishers offered their first catch at the Kū and Hina stones.

The Kū stone represented Kū'ulakai, the god of fishing, who some say had control over all the other gods of the sea. When he died, one of the gifts he left for his son, Ai'ai, was a magic stone called Kū'ula, which had the power to attract fish. The son traveled about the islands and set up fishing altars upon which to lay two fish from the first catch, one for his father, Kū'ula and one for his mother, Hina (Beckwith, 1970). The Kū stone was placed in an upright position on the eastern side of the fishpond. The Hina stone, representing Kū's wife, lay flat on the western wall of the fishpond. At the fishponds, a small pile of coral or stones was erected where fish were offered in ceremony to Kū'ula by the kahuna (priest). The kahuna would call upon [Kū or] Hina...
to draw the fish from the sea and into the pond. If the fish tried to escape, they would sense Kū'ula's presence and fear leaving the pond. If they tried to make their way over the wall of the pond, the stones — representing men — would prevent them from escaping (Wyban, 1992).

Every member of traditional Hawaiian society composed chants, poems, and songs. It was typical for a person to have a name chant composed for him or herself at birth. It was everyday protocol for a passerby to chant out to someone for permission to enter one's home or to enter a special place.

The following passage describes how loina (Hawaiian protocol) was part of everyday life for the Hawaiian people.

What is loina (Hawaiian protocol)?

It is the right behavior conducted at the appropriate time by the proper people, presented to the correct recipients, toward a positive and significant end.

Protocol almost always involves words, presented usually in the form of oli or chant. Oli takes the power of words, themselves recognized as highly significant in Hawaiian and in many other cultures, and extends that power of words to a higher level that fulfills several functions:

1. **It focuses the attention** of all participants to the task at hand.
2. **It evokes respect** in the form of silence and attention on the part of the recipients.
3. **It prepares the participants** to engage seriously in what will follow.
4. **It initiates a set of responses** from those who know the protocol, and therefore sets into action a social process that unifies not only those who conduct the protocol but also all who are involved.
5. **It transforms the mood** from the mundane and ordinary into something deeper and more important.
6. **It links all participants together** and consolidates them into a unit.
7. **It links the participants to their surroundings** via an enhanced sense of place.
8. **It expresses and confirms a living and vital Hawaiian culture**, making each person a bit more appreciative of and more connected to these islands that we call home.

Protocol suggests that training and practice is involved, and indeed this is so. The practice is a traditional and oral one, with teachers passing the proper and expected behaviors to their students. Students and teachers in turn practice protocol with each other and develop comfort at conducting themselves in very specific ways that often demand exactly the right words and actions in a prescribed sequence.

Proper behavior and words are highly dependent on the situation. For example, the protocol for greeting a person of significance is different from the protocol of entry to a significant site and different from the protocol for presentation of an offering or gift. Whatever the situation, protocol is based on a foundation of values that are important to everyone, regardless of their ancestry and upbringing. These are fundamentals such as respect for others and for the land, an attitude of sharing and responsibility for maintaining a balance between self and society and between human beings and the rest of the universe.

*Written by: Sam Gon III, Ph.D., Director of Science at the Nature Conservancy of Hawai‘i and Chanter with Kumu John Keolamako‘ainana Lake*
Teaching Suggestions

1. Begin the day with Hawaiian music playing (preferably a song with a nature theme). Discuss students’ reactions to the music. Which values are evident in the mele (song)?

2. Distribute the first activity sheet and ask students to read and discuss it.

   **Discussion Questions**
   - What was the significance of the Kū stone and the Hina stone at the fishpond? *(The kahuna would call upon Kū or Hina to draw fish from the sea into the pond.)*
   - In the mo'olelo, what is the ko'a and how is it used? *(Ko'a are fishing shrines made of coral or stones. Offerings are made to thank the gods for the fish that are received or to ask that the gods help the fish multiply and become plentiful.)*
   - Which values are evident in traditional fishing practices? *(kuleana [responsibility], laulima [working together], ho'iihi [respect], taking only what you need)*

3. Distribute the student reading (mo'olelo) and have students take turns reading the text aloud. Discuss their reactions to the mo'olelo.

4. Ask each student to write a summary of what the story means to him or her. Ask them to describe what traditional fishing practices and the mo'olelo reveal about early Hawaiian life and values.

5. Have students share their ideas about the readings and discuss them with the class.

   **Discussion Questions**
   - What do traditional fishing practices and the mo'olelo reveal about early Hawaiian life and values?
   - Why are the cultural traditions and practices important to preserve?
   - What other cultural traditions are important in your life and how are they preserved?

6. Distribute the second activity sheet to students and explain how to utilize the format to create a mele. Share your composition as an example. Challenge students to compose their own mele about a special place in nature.

7. Ask students to work in pairs and share their mele (song) with a partner.

8. Have students complete the assessment activities and work together (laulima) with their classmates and a kupuna to write a mele or an oli that they can share with others when the class visits the fishpond. The oli (chant) can be used as greeting to the staff at the fishpond.
Adaptations/Extensions

- Combine individual student compositions to create a song. Experiment with ancient and modern rhythms and compose a beat to students’ compilation.

- Ask a hula teacher or your school’s kupuna or makua to help students compose hula motions to convey the meaning and imagery of their mele. Help students develop costumes and share the hula with other classes. Students can perform their hulas for cultural protocol, assessment purposes, or for special school events that allow for them to exhibit their work.

- Have students prepare a ho‘okupu (gift-giving) for their trip to the fishpond. It is customary to show appreciation by presenting hosts with a gift. The gift may include a simple illustration from the students or something more lavish. Idea: Ask each student to bring a fruit, vegetable or small plant from their home. The item they bring should be something personal either a fresh food produce they enjoy eating or a plant grown in their yard. Combine these items, making a gift basket, which can be presented to your hosts.

- Re-visit the K-W-L chart from Unit 1 and add students’ new ideas and questions they wish to pursue.

References

Student Activity Sheet 1

Hawaiian fishponds and fishing practices help us to learn about early Hawaiian life. In the old days at the fishpond, an upright Kū stone was placed on the eastern wall of the pond. A stone for the goddess Hina was placed on the western side. The god Kū had many forms. One form was the god of fishing, Kū‘ulakai, which means “an abundance from the sea” or “red Kū of the sea.” Hawaiians offered prayers to Kū‘ulakai, the fish god, by facing to the east at early morning. Prayers to Hina were offered facing to the west.

Legend has it that if the prayers to Kū were not answered, the people would plead to the goddess Hina. They prayed to her to influence Kū and make the fish plentiful for the people. The first fish caught was offered to Kū‘ulakai. Part of the first taro or sweet potato harvest was also offered to the gods. Limu kala lei were offered to Kū‘ulakai at the ko‘a (fishing shrine). This practice continues today by anyone grateful for the gifts that come from the sea.

Today we continue to express cultural values through oli (chants), mele (songs), and mo‘olelo (stories). Expressing values, such as hō‘ihi (respect) and kuleana (responsibility), is an important part of Hawaiian protocol. The mele and mo‘olelo are passed down to help us appreciate the Hawaiian culture and learn proper actions toward others and our environment.

Activities

1. Read the mo‘olelo about a woman who caught he‘e (squid or octopus) for the ali‘i (chief).

2. On the reverse side of this page:
   - Write a summary of the values that the story teaches.
   - Describe what the story means to you.
   - Describe Hawaiian fishing practices related to the ko‘a (fishing shrine).

3. Use the activity sheet provided to help you write a mele that expresses how you feel about a place in nature.
Student Activity Sheet 2

Make your own mele/song by inserting the appropriate words from the papa ‘ōlelo/ vocabulary categories A, B, C, D, E into the format below.

1. Identify the place (A) and the name of the place.
2. Briefly describe a physical feature of the place (A and B).
3. Briefly describe an experience (‘īke-to see) of the place (B).
4. Tell why the place is special to you (C) and the place name (D).
5. Give the name of a person (E) for whom this mele/song is written.

1. (A) ____________________________ ‘o (D) ____________________________.

2. (A) ____________________________ (B) ____________________________.

3. ‘Īke i (B) ____________________________.

4. (C) ____________________________ ‘ia ‘oe i (D) ____________________________.

5. He mele kēia na (E) ____________________________.

Papa ‘Ōlelo/Vocabulary

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<tr>
<th>Category</th>
<th>Hawaiian Word</th>
<th>English Translation</th>
</tr>
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<tbody>
<tr>
<td>A</td>
<td>kaulana</td>
<td>famous</td>
</tr>
<tr>
<td></td>
<td>hanohano</td>
<td>glorious</td>
</tr>
<tr>
<td></td>
<td>nani</td>
<td>beautiful</td>
</tr>
<tr>
<td></td>
<td>uluwehi</td>
<td>lush, verdant</td>
</tr>
<tr>
<td></td>
<td>waiwai</td>
<td>valuable</td>
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<tr>
<td></td>
<td>malo'o</td>
<td>dry</td>
</tr>
<tr>
<td></td>
<td>pulu</td>
<td>wet</td>
</tr>
<tr>
<td></td>
<td>‘olu’olu</td>
<td>pleasant</td>
</tr>
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<td></td>
<td>kilakila</td>
<td>majestic</td>
</tr>
<tr>
<td></td>
<td>ki‘eki’e</td>
<td>high</td>
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<tr>
<td>B</td>
<td>ka ‘aina</td>
<td>land</td>
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<td></td>
<td>ka uka</td>
<td>uplands</td>
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<td></td>
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<td></td>
<td>ke kahawai</td>
<td>stream</td>
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<tr>
<td></td>
<td>ke kula</td>
<td>plains, field</td>
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<td></td>
<td>ke kahakai</td>
<td>beach</td>
</tr>
<tr>
<td></td>
<td>ke kai</td>
<td>sea</td>
</tr>
<tr>
<td></td>
<td>ka moana</td>
<td>ocean</td>
</tr>
<tr>
<td></td>
<td>ka lae</td>
<td>headland</td>
</tr>
<tr>
<td></td>
<td>ka nahele</td>
<td>forest</td>
</tr>
<tr>
<td>C</td>
<td>ho‘okipa</td>
<td>to welcome</td>
</tr>
<tr>
<td></td>
<td>kono</td>
<td>invite</td>
</tr>
<tr>
<td></td>
<td>mālama</td>
<td>care for</td>
</tr>
<tr>
<td></td>
<td>‘ume</td>
<td>attract</td>
</tr>
<tr>
<td></td>
<td>ho‘opili</td>
<td>to come together</td>
</tr>
<tr>
<td></td>
<td>aloha</td>
<td>love, affection, greeting</td>
</tr>
<tr>
<td></td>
<td>ho‘olu</td>
<td>to make comfortable</td>
</tr>
<tr>
<td></td>
<td>ho‘ohau‘oli</td>
<td>to make happy</td>
</tr>
<tr>
<td></td>
<td>kāhea</td>
<td>call out</td>
</tr>
<tr>
<td>D:</td>
<td>(name of place you are writing about)</td>
<td></td>
</tr>
<tr>
<td>E:</td>
<td>(name of person for whom you are writing this)</td>
<td></td>
</tr>
</tbody>
</table>
Student Reading - Mo‘olelo

There lived a woman on O‘ahu that was noted for her skill in catching the he‘e (octopus or squid). One day, a chief planned for a large lū‘au (feast) that would require a large amount of he‘e. The woman was summoned by the chief and told that he would allow her to catch he‘e in his ahupua‘a for this purpose.

The next day the woman brought her daughter with her and set out to catch what she needed. Before she entered into the water, an elderly man met her at the shore. He carefully reminded her that she could only catch a certain amount of he‘e. He told her that once she had gotten what she was allowed, she should return home with her catch and not to stop for anything.

While fishing, she caught all that she was allowed to catch but instead of returning home as instructed, she continued to fish. She soon found that she had more than she could handle. She called her daughter and instructed her to go home with half of the catch while the woman went home with the other half. While her daughter made her way to the shore, the woman caught a glimpse of a huge he‘e and she proceeded to try and catch it. At that moment, a shark appeared and bit off the woman’s legs. The daughter heard her mother screaming and tried to rescue the woman but it was too late. She died from the severity of the shark attack.

When the people retrieved what was left of her body, they noticed a single deep gash on her right arm. The people immediately recognized the discrete cut as having been made by the teeth of a shark that was known to guard the area. After this incident, the people named the area Paumalū, which is an area that includes Sunset Beach on the North Shore of O‘ahu and means “taken illegally.”