Canoe Plants: Then and Now
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HCPS III Science Standard Addressed: 2.1, 4.2.1, & 4.6.1

Grade Level: 4-5
Project Time Span: 1 day (includes 1 field trip)

To The Teacher:

• Define Canoe Plants (plants that were brought by Polynesian settlers prior to 1778)

• Must have knowledge of canoe plants’ traditional uses and modern items that have replaced them. i.e., tin foil has replaced kī for cooking purposes, corn starch has replaced pia as a starch for baking haupia, synthetic materials have replaced lauhala made items, cotton has replaced kapa as cloth, alcohol has replaced ‘awa as a social beverage, electricity has replaced kukui as a light, shampoos have replaced ‘awapuhi, and plastic containers have replaced ipu as storage.

• Call to make an appointment with Harold L. Lyon Arboretum (University of Hawai‘i, Mānoa 3860 Mānoa Rd. Honolulu, Hawai‘i 96822, 808-988-0456) or any botanical garden that has a canoe garden.

• A site visit, if not required, is highly recommended to prepare for elements and pick up necessary forms.

Goals of the Lesson:
• Show plants’ role in everyday life.
• Explain how technology helps us transform raw plants into common household items.
• Explain how we, as a species, are dependant on plants.
• Value plants and, in turn, CARE:
  E Hi‘ipoi I Nā Mea Kanu. Cherish the plants.

Student Learning Objectives (Benchmarks):
This lesson addresses Biological Science benchmarks for HCPS III Science Standards:
2.1 Explain how scientific advancements and emerging technology have influenced society and the Hawaiian culture. This lesson also addresses Grade 4 Science benchmarks for HCPS Science Standards:

4.2.1 Describe how the use of technology has influenced the economy, demography, and environment of Hawaii.
4.6.1 Describe how some materials may be combined to form new substances.

Resources and Materials:
Books
- Paye, Gabriell DeBear, 2000, Cultural Uses of Plants Bronx, New York, the New York Botanical Garden Press
- Balick, Michael J.; Cox, Paul Alan, 2005, Plants, People, and Culture: The Science of Ethnobotany Printed in the United States of America; Distributed by American Botanical Council
- Krauss, Beatrice H., 1993, Plants in Hawaiian Culture Honolulu, University of Hawai`i Press

Websites
- [http://www.lyonarboretum.com](http://www.lyonarboretum.com)
- [http://www.wehewehe.org](http://www.wehewehe.org)
- [http://www.botany.hawaii.edu/faculty/carr/natives](http://www.botany.hawaii.edu/faculty/carr/natives)

Materials
- Direct products of or local items in their original packaging with one or more ingredient from a canoe plant.
- i.e., Sugar cane, Kō - sugar
  - Coconut, Niu – can of coconut milk, dried coconut, sennit, coconut leaf hat/basket, kūlolo
  - Polynesian Arrowroot, Pia- haupia
  - Paper Mulberry, Wauke – kapa (partially dyed with `ōlena would be best)
  - Turmeric, `Olena – curry powder, dye for kapa
  - Pandanus, Pū Hala – lauhala mat/hat/bag/basket, dried drupe or hala used to apply dye onto kapa
Taro, Kalo – poi, taro flour, taro chips, laulau, kūlolo
Ti Leaf, Kī – laulau, ti leaf lei, ti leaf slippers
Shampoo Ginger ‘Awapuhi- shampoo bottle
Candlenut, Kukui – kukui nut oil/skin care products
Indian Mulberry, Noni – noni juice
Kava, ‘Awa - ‘awa pills/powder
Banana, Mai’a – banana bread

Instructional Procedures:
- Students walk to canoe garden, look around, and ask questions. Ask students as a whole if they use any of these plants here.
- Walk to and stop at each plant. Ask students to identify. Say and have students repeat plants’ Hawaiian and common names.
- Explain briefly why this plant was brought to Hawaii with the early Polynesians; its ethno botanical use/s.
- Pull out from box/lauhala basket the store-bought item made from that plant. Show students, pass it around. Do you have this in your home?
- Explain how this product was processed; emphasize the technology available today that made it possible. Is the plant still used? Same? Different? Has another plant been introduced to replace a plant?
- Continue for all plants you have products for.
- Ask students again as a whole if they use any of these plants here.

Assessment:
- Students could be given the attached test before and after the activity as both a pre and post assessment.

Extension:
- Scientific nomenclature can be introduced after students have learned common and Hawaiian names of plants.
- Have students go home and find five other items with one or more plant ingredient. Where is the product from? What plant is the product derived from? Where is the plant native to or from originally?

Evaluation of Lesson:
What worked well
- Size of group, about 25
- Seeing live plants in a garden setting after reading about them and seeing pictures in a book.
- Having students repeat names aloud as a group.

What would I do differently
- Briefly recap what they learned about canoe plants and ethnobotany.
Pre and/or post test:

1. My buoyant fruit provides refreshing water. The meat of my fruit has been and still is grated and squeezed to make milk. My leaves are still used for weaving and pahu or drums are made from my trunk. I’m also known as niu.
2. A spoonful of me helps the medicine go down. I’m also known as kō.
3. My fibrous bark was used to make cloth. I’m also known as wauke.
4. Yellow curry powder and dye comes from my roots. I’m also known as ʻōlena.
5. My underground stem was cooked and pounded. I’m also known as kalo.
6. Hats, baskets, mats, and purses are made from my dried leaves after they are flattened and dethorned. I’m also known as pū hala.
7. I’m wrapped around laulau and was once used to make slippers and raincoats. I’m also known as ʻawapuhi.
8. My nuts have a fleshy outside. My kernels were burnt as a source of light and the oil from my kernels are used as a skin product. I’m also known as kukui.
9. The juice from my fruit is used to kill lice in your hair. My fruit is also fermented to make a medicinal drink. I’m also known as noni.
10. My roots and stems make a beverage for relaxing your muscles and is also used ceremonially. I’m also known as ʻawa.
11. My red inflorescence is used as a hair conditioner. I’m also known as ʻawapuhi.
12. The starchy tubers were cooked with coconut milk and sugar to make a Hawaiian dessert (haupia). I’m also known as pia.
13. My yellow fruits come in a bunch. I can be cooked or eaten raw. I’m also known as maiʻa.

_____ . Coconut
_____ . Sugar Cane
_____ . Paper mulberry
_____ . Turmeric
_____ . Taro
_____ . Pandanus
_____ . Ti Leaf

_____ . Candlenut
_____ . Indian Mulberry
_____ . Kava
_____ . Shampoo Ginger
_____ . Polynesian Arrowroot
_____ . Banana