

Sail Away



Lesson in a Glance

Students will design and outfit an ocean going canoe for a voyage to the Northwestern Hawaiian Islands.

Objectives

Students will be able to:

- Build a life size or small model of a canoe.
- Explain what they will take on this journey and why.
- Explain who will make up the crew. What jobs or tasks need to be accomplished.

Background Information

The Polynesians spent several weeks at a time living and sailing on double-hulled canoes. Each hull was made from a hollowed out log. The two logs were connected together and a platform attached to the top of the two hulls. The hulls became storage and the platform the living space. Early Polynesians settlers migrated in these canoes. Everything they owned and would need to start their new life had to go on this canoe. If this was your canoe, how would you design it and what would you take?

Materials Needed

- Paper and colored pens for designing the canoe
- Chalk and yardsticks or measuring tapes for building the life size model
- Hokule'a model: aluminum foil, four plastic straws, chewing gum/putty/clay, cardboard, tape, construction paper, stapler and staples, hole puncher and needle and thread
- Creative canoe models: assorted materials for building double hulled canoes, milk cartons, tagboard, balsa wood.



Student Activities

1. Life Size Canoe Model

Create a canoe to actual size to help students understand how big (or little) this canoe actually is. The Hokule'a is 17'6" wide and 62'4" long, this includes the hulls and deck. The deck is about 9' by 50'. Have the students draw the Hokule'a on paper to scale. They need to figure out how big the hulls are if the deck is as stated above. The hulls are used for storage and hammocks hang above them. Let's assume that the hulls are the same size. Once they have this figured out have them draw this to actual size. An easy way to do this is to draw it with chalk on the basketball court or parking lot. Have 12 students get on this canoe and pretend to live on it and sail it. This should give them a good perspective of how much space is available on this canoe.

2. Preparing for the Voyage

Imagine that you lived long ago on a small island in the Pacific. You wanted to migrate to a new island to start a new life. How would you go about doing this? Design and draw an ocean voyaging canoe. Include sleeping quarters, a food preparation area, storage etc. Include a scale to show the size. List everything you would take and why. Where would you put it on the canoe? Include all of these items on your drawing of your canoe. Write a short story describing what you think a journey on this canoe might be like.

Make a list of the 12 crew members you think should be on the canoe. What jobs need to be done? What would be important things to think about as you choose your crew?

After students have complete the project share with them the attached pages on "Daily Living Aboard the Hokule'a" and "Roles and Duties of Hokule'a Crew Members".

3. Creating Hokule'a Models

Challenge students to build a model of the canoe. Attached is a design of a canoe model that could be used.

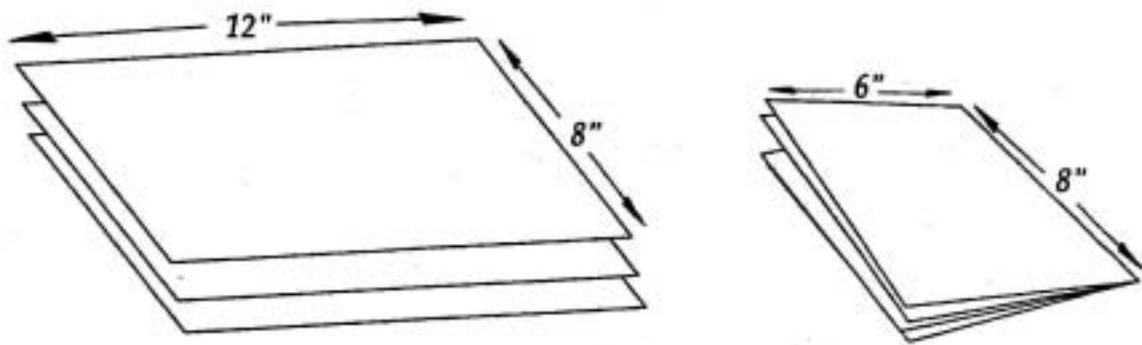


Hokule'a Model

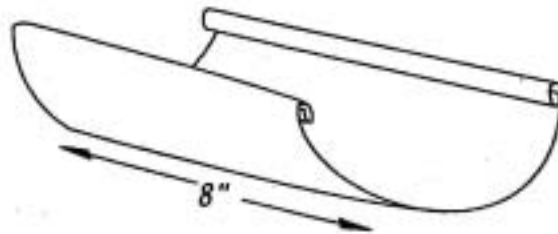


You will need: aluminum foil, about four plastic straws, chewing gum or putty, cardboard, tape, construction paper, stapler and staples, hole puncher, needle and thread

1. Cut three pieces of 8" x 12" aluminum foil. Place together and fold in half to 8" x 6".



2. Fold over the edges twice (this will make the canoe hull more sturdy).

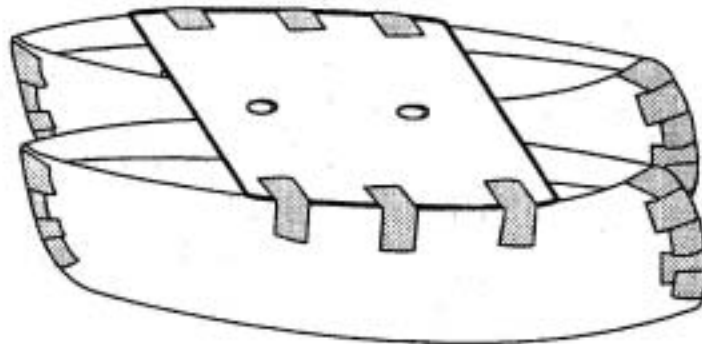


3. Fold in half again. Fold and pinch together ends to form hull shape as below. Then tape along the ends.

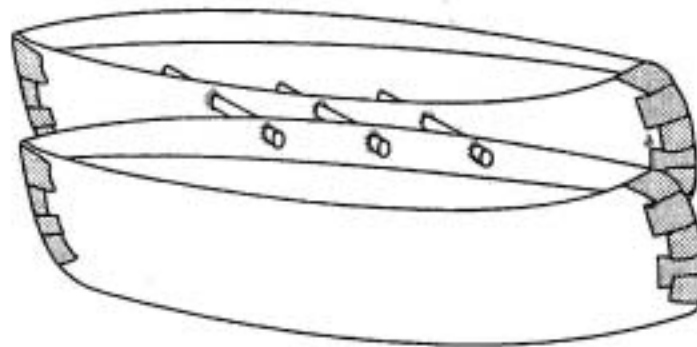


Hokule'a Model (continued)

4. Repeat steps 1 through 3 to make a second hull.
5. Using the hole puncher, make three holes in the side of each hull. Cut your straws into three 3" pieces and use them to connect the hulls (see below). Place gum or putty on the inside of the hull to hold sticks in position.

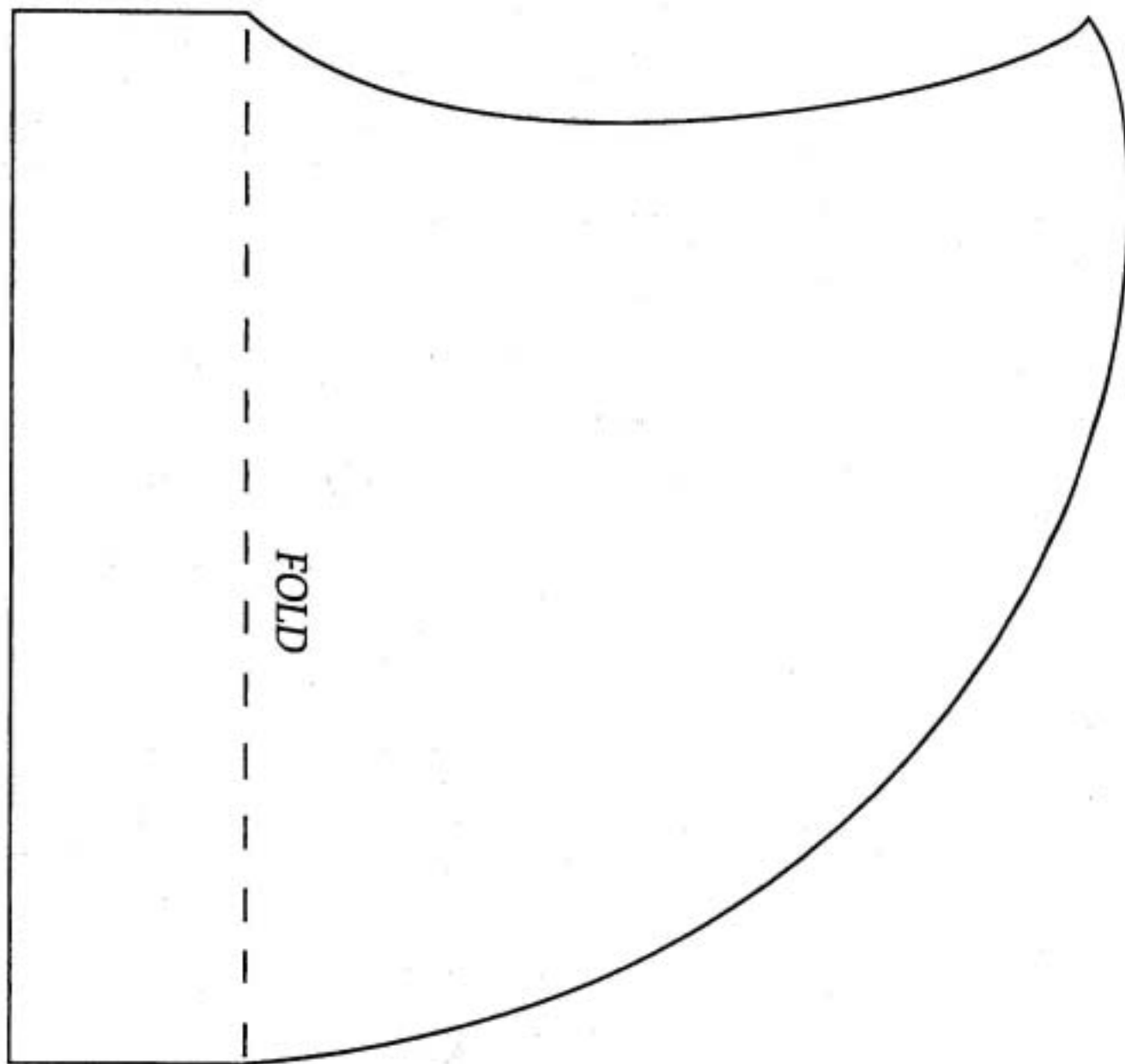


6. Cut a piece of cardboard for the deck, about 5" x 5". Make two holes for the masts. Place the deck on the hulls and tape.



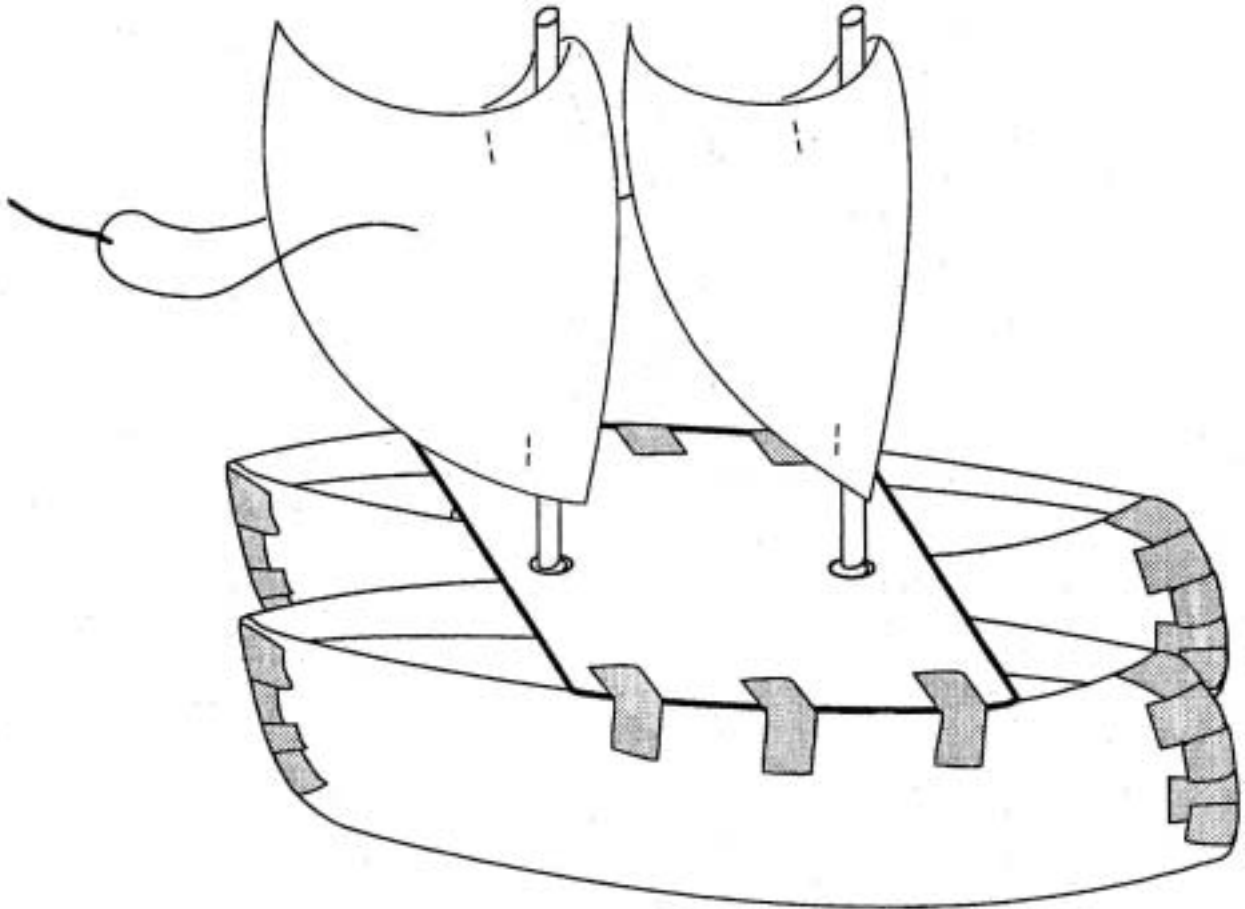
Hokule'a Model (continued)

7. Trace the sail pattern and then cut out the tracings. Place the tracing over a piece of construction paper and cut two sails out of construction paper. Fold the edge of the each sail around a straw and staple (loosely, so that the sail can move back and forth on the mast). Place the masts into the deck.



Hokule'a Model (continued)

8. Use needle and thread to attach a line to each sail. Connect the two lines with a knot so you can control both sails with one hand.



Daily Living Aboard Hokule'a

Eisa Yadao

"Once you go on the canoe, because it's so small, you try to make it like one family."

That is the sailing philosophy of Snake Ah Hee, a 16 year veteran crew member of the Hokule'a. For a dozen plus people to live happily and harmoniously in tight living quarters and over thousands of miles, he and other crew members know the right mental and emotional attitude is key.

Living quarters are tight—roughly 40 square feet of space on Hokule'a's deck. Sleeping quarters are even more cramped and less than comfortable. The sleeping compartments run the length of both sides of the deck and are covered with canvas. Individual spaces measure about 6 feet in length and 3 feet across, usually with two crew members assigned to each bunk. One person sleeps while the other stands watch. Personal belongings are stowed here, with each crew member allowed one 48 quart cooler. Beds consist of a board placed over the coolers, covered by a sleeping pad.

Bathroom facilities, located on either side of the canoe, take things right down to basics. Going to the bathroom involves strapping a safety harness over your shoulders, hooking the harness to a safety line, and then going overboard to relieve yourself.

Bathing is done either forward or aft on the canoe. Forward, you sit in a net slung between the two canoe hulls. Aft, you bathe in an open compartment, pulling salt water up in a 5 gallon bucket. You use a special sea soap, which makes bathing in salt water actually refreshing.

Because the canoe is so small, privacy is limited at best, but all crew members respect the needs of others. Generally, when someone is bathing or going to the bathroom, the rest of the crew moves away out of courtesy. When women are sailing, certain accommodations are made, such as hanging a curtain over the aft bathing area.

Cooking is done in the center of the canoe. The galley, or kitchen, is a two burner propane gas stove housed in a metal box. By necessity most of the food on board comes out of a box or can, supplemented by whatever fresh fish the crew can catch. Each voyage has a designated fisherman, who puts his trolling lines out off the back of the canoe every morning.

On long trips, food is much more than a source of nutrition and sustenance. Mealtime is one of the few times during the day that the entire crew is together on deck. On long monotonous days, meals are highlight. When the weather is cold and rainy, a hot meal can do wonders for morale.

The canoe carries bottled fresh water for cooking and drinking. On an estimated 30 day voyage the canoe will carry enough water for 40 days at sea. If water supplies become too low, the captain can order that water be rationed. Crew members also store rain water for cooking and bathing.

It takes a lot of work to sail Hokule'a and everyone is assigned a job. Crew members are divided into watches, teams of people who work specific shifts. Generally each person works a four hour shift twice a day, with eight hours off in between. If you

are on the 2 to 6 watch, you'll work from 2 to 6 in the morning and then again from 2 to 6 in the afternoon.

The watch on duty is responsible for maintaining the canoe, working the steering paddles, handling the sails and keeping water out of the compartments. At the start of watch the crew runs through a safety checklist to ensure that Hokule'a is in optimum sailing condition. Each watch has a captain responsible for supervising the others on his or her team.

When crew members are off watch, they rest, read, write in their journals, wash laundry, make music or simply relax and enjoy being out at sea. Time can pass slowly although this is the exception rather than the rule. Being away from home for extended periods of time, the crew does experience ups and downs and homesickness is not uncommon, especially for the crew members. Older crew members have the responsibility to make sure that everyone gets through these low points. Ω

Roles and Duties of Hokule'a Crew Members

Elisa Yadao

Sailing Hokule'a is a rigorous job and it requires the participation of all crew members on board. To ensure that the canoe sails safely and efficiently, each person fills a specific role. Jobs vary from that of the navigator, to those crew members whose primary responsibility is documentation of the voyage for historical purposes. Providing they fill the job requirements, both men and women can hold the various positions described below.

The person who carries the overall responsibility for the canoe and crew is the sailmaster. While he serves primarily in an advisory capacity, it is the sailmaster who has the final say on the canoe's sailing strategy and course and on all other operations of the canoe. He works in consultation with the navigators and captain.

The navigator determines the canoe's course, sets the sailing strategy, and determines the direction in which the crew will sail Hokule'a. He must stay oriented at all times, and this means that generally he is assigned no other duties aboard the canoe. In order to keep track of the canoe's direction, the navigator stays awake 20 hours a day, seated on a platform at the aft of the canoe. Much of the time, the navigator gives direction to the crew through the ship's captain.

The captain's primary responsibility is the safe sailing of Hokule'a and this encompasses everything from ensuring that a capable well-trained crew is on board to the physical maintenance of the canoe. Much preparation is done before the crew and canoe ever leave shore and this is done under the captain's direction. In consultation with the other officers, the captain schedules work parties for preparing the canoe to sail. Relashing canoe parts, mending sails, cleaning and painting Hokule'a's hulls are just some examples of the kinds of work done before sailing.

Another big job is loading the canoe with food, water, and safety gear required on voyages. Again, it is the captain's responsibility to ensure that this is done properly.

At sea, the captain executes all decisions relative to sailing. Once the navigator sets the sailing strategy, it is the captain who directs the crew to hoist, drop or change sails and he determines which steering paddles to use. He is responsible for coordinating activities with the escort vessel and providing a daily work schedule for the watch captains. The captain holds overall responsibility for maintaining the canoe's inventory, and he decides when and if to ration food and water. When approaching land, the captain handles most administrative matters, such as dealing with customs officials and maintaining the canoe's security while it is moored.

The watch captains direct those crew members assigned to their watch or work shifts, carrying out instructions relayed by the captain. The watch captain is responsible for ensuring that his crew is up and on duty in a timely fashion, assigning specific steering positions to his crew and directing rotations through the various positions, going through the safety check list, and maintaining his watch log. He is responsible for maintenance of the canoe during his watch, including cleaning up after meals. Additionally, the watch captain is responsible for monitoring the safety, health and morale of his crew

Other tasks are assigned to crew members and carried out in addition to standing watch. The medical officer, a certified doctor, aboard Hokule'a for each long voyage. His primary responsibility is the health of the crew. It is the medical officer's responsibility to ensure that the canoe is equipped with all medications and medical supplies needed for a long journey. When the canoe is in foreign ports, the medical officer is also responsible for attending to the crew's health and medical needs on shore.

The radio operator handles all radio transmissions between Hokule'a, and the escort vessel and between the canoe and land. He maintains an accurate log of all radio traffic, and is responsible for the upkeep of the radio equipment.

A designated carpenter oversees all repairs done on the canoe. He also maintains the tool inventory. An assigned electrician maintains all electrical systems.

The cook plans the canoe's menus and does most of the cooking. While this may not seem like an important job, the ability of the cook is directly related to the morale of the crew as meals are the highlight of each day. Good nutrition is also an important factor in maintaining the health of the crew.

The quartermaster has direct responsibility for provisioning the canoe—loading food, water and all needed supplies, and for maintaining Hokule'a's inventory. While this is not an on board job, it is critical to the safe and efficient sailing of the canoe. Weight must be evenly distributed for optimum sailing.

Fishing off of the canoe is not a leisure time activity, but an actual designated job, and one crew member is responsible for setting and bringing in fishing lines each day and for landing all catches. Fresh fish provide an important food source at sea.

Documentors keep historical records of the voyage by various means including writing, video and audio taping.

The safety officer is responsible for all safety and emergency systems and equipment. Life jackets, life preservers, flares and fire extinguishers are just some examples of the gear the canoe carries. In addition, all crew members must be trained in man overboard and fire procedures.

Crew responsibilities are exactly the same as the watch captain, with the exception of the administrative duties. Off watch, crew members main obligation is to keep out of the way of those on duty.

Leisure time is spent in a variety of ways including resting, reading, writing, and taking care of personal chores (laundry, cleaning out compartments etc.). In the event of bad weather or an emergency and an all hands on deck call, all of the crew members are expected to work.

All jobs on the canoe, no matter how routine they may seem, are important to the overall safe sailing of Hokule'a. A crew member's most critical responsibility is to realize that his crewmates depend upon him to carry out his assigned duties, and to work well as a part of a team. Ω