



'Ike Pono Hawai'i

Ka Ho'okele 'Ana – Navigation

Objectives:

Students will:

- Describe how navigation contributes to the preservation of Hawaiian culture.
- Identify three natural navigational clues used to find islands.
- Learn the four cardinal directions (N, S, E, and W) in English and Hawaiian (Ākau, Hema, Hikina, and Komohana).

Hawai'i Content Standards:

Content Area: Social Studies Grade: 4 Quarter: 3 Unit: 2 Lesson: 1

Standard 6: Cultural Anthropology: SYSTEMS, DYNAMICS AND INQUIRY

Understand culture as a system of beliefs, knowledge and practices shared by a group and understand how cultural systems change over time.

Big Idea(s) / Major Understanding (s): Students will understand that ...

Cultural change and continuity can be seen and understood through primary and secondary resources.

HCPS III Benchmarks:

4.6.1 Cultural Systems and Practices

Explain how language, traditional lore, music, dance, artifacts, traditional practices, beliefs, values and behaviors are elements of culture and contribute to the preservation of culture.

Nā Honua Maui Ola Guidelines:

1. Incorporate cultural traditions, language, history, and values in meaningful holistic processes to nourish the emotional, physical, mental/ intellectual, social, and spiritual well-being of the learning community that promote healthy *mauli* (life spirit) and *mana* (power bestowed directly or indirectly from a supernatural source; an inherent quality of command and leadership; authority).



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2. Maintain practices that perpetuate Hawaiian heritage, traditions and language to nurture one's *mauli* and perpetuate the success of the whole learning community.
3. Sustain respect for the integrity of one's own cultural knowledge and provide meaningful opportunities to make new connections among other knowledge systems.

Activity at a Glance:

Students will start off with an imagery activity in an attempt to bring the outside environment into the classroom. They will learn and see visuals that will take them through a day in the life of a navigator. Group movement activities to teach and reinforce the four cardinal directions will be a highlight of the lesson.

Assessment:

Hilina'i (Trust) Activity

Time:

One hour

Materials Needed:

1. Micronesian Star Compass model or graphic
2. Hawaiian Star Compass model or graphic
3. Cardinal Direction Cards (N,S,E,W) in Hawaiian/English
4. Navigation Graphics (Sun, Moon, Stars, Birds, Clouds)
5. CD player w/extension cord
6. CD w/navigational clue sound clips
7. Blindfolds (15)
8. Hawaiian Value Placard - Hilina'i (Trust)
9. 'Ōlelo No'eau Placard – Mai ka ho'okui i ka hālāwai. (#2059)
10. Blue Navigation Tarp w/gridlines or using masking tape or rope, create gridlines on classroom floor
11. Students will need colored markers for Navigation Grid Activity.

Student Handouts:

1. 'Ōlelo No'eau, Waiwai Hawai'i, and Nā Hua'ōlelo Hou (New Vocabulary) cover page
2. The Navigational Grid worksheet
3. Environmental Navigational Clues worksheet

Vocabulary:



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'akau – north
hema – south
hikina – east
hilina'i – trust
hōkū – stars
hōkū hele – planets
komohana – west
lā – sun
laulima – working together cooperatively
mahina – moon
Mai ka ho'oku'i i ka hālāwai – From zenith to horizon
mālama – to care for
manu o kū – fairy tern
noio – noddy tern
'ōlelo no'eau – Hawaiian proverb or wise saying
waiwai Hawai'i – Hawaiian value

Teacher Background:

Trusting in their keen observation skills, Polynesians of old were able to find and settle our homeland of Hawai'i. Traditional navigators used celestial clues – the lā (sun), mahina (moon), hōkū (stars) and hōkū hele (planets) – to guide their voyaging canoes. Navigators were also able to read the weather and the ocean environment. They observed the sequence of cloud formations. They could determine wind direction and strength. They noted the changing patterns of ocean swells. All this information was needed in order to set a safe course for their double-hulled sailing canoes.

Daily progress was monitored in two ways. Navigators made mental marks in their minds and physically tied knots on a rope to keep track of the number of days they were at sea.

A day in the life of an ancient navigator started off with the rising of the sun. When the sun got too high, it was no longer a good source of direction, so the ocean swells were relied upon. So attuned was the navigator to his environment that he could visually read and feel the direction of three to five swells as they pitched and rolled the canoe. During the middle of the day, it was these ocean swells that enabled him to set the course of their travel. Later in the day, as the sun started to set, the navigator once again picked up the sun as a clue for direction. At night, he was guided by the moon, stars, planets and ocean swells until the sun rose again. Such was a typical day at sea for an ancient navigator.

As voyagers neared land, they expanded their visual sight of landfall in several ways. They noted the flight patterns of land-based birds, the types of fishes being caught, seamarks and the kinds of debris seen floating in the water. They also observed cloud formations and cloud color.



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Land-based birds such as the manu o kū (fairy tern) and noio (noddy tern) were especially helpful in spotting land because they had a pattern of flying out to sea in the morning to gather food for their chicks, and then returning to land in the afternoon to feed them. If a navigator sighted one of these terns in the morning, he would observe where it was coming from. If he saw this bird in the afternoon, then he would look towards where it was going. In both situations, sighting the manu o kū or the noio meant that land was near.

Practicing the values of mālama (to care for), hō'ihi (respect) and laulima (working together cooperatively) were key elements to the survival of our ancestors and our native culture.

Source: "Ka Huaka'i Ana - Voyaging," 'Ike Pono Hawai'i Hawaiian Traveling Resource Program-A Teacher's Guide. Honolulu: Kamehameha Schools, 2004.

Instructional Procedures:

1. Activity: Simulating a voyage on a double-hulled canoe, navigating with the stars.
 - a. Play CD with sound recordings of ocean waves splashing against the hulls, pouring rain, thunder, wind blowing, birds, etc.
 - b. Narrate according to CD
 - c. Sample Narration: Students close your eyes and imagine sitting in the middle of a canoe, in the middle of dark blue ocean, underneath a dark night sky where you can see thousands of points of lights – stars. Imagine how it would feel hearing the waves thrash against the hulls, feeling the motion of the ocean? How would you feel after sensing a slight drizzle of rain on your skin and then hearing a loud noise like thunder and seeing lightning? Would you be afraid? Would you huddle next to your friends for comfort or warmth? How would it feel being wet all day and night? How would it feel when the wind starts to blow very hard? Are you cold? Would you reach for your rain jacket or ti leaf rain cape for warmth? How would it feel when you hear the sound of chirping birds? Is it a sign that land may be near? How would it feel to finally see land after 25 – 30 days at sea? Raise your hand if you can imagine yourself sailing on a canoe on the ocean?
2. Introduce the 'ōlelo no'eau (wise saying): Mai ka ho'okui i ka hālāwai. From zenith to horizon. (Pukui, #2059)
 - a. It is an expression in prayers to the gods, calling them from everywhere. Explain the meaning behind the 'ōlelo no'eau.
 - b. Another use of the 'ōlelo no'eau is to bring students back to focus after group work.
3. Introduce the Hawaiian value, hilina'i (trust).



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- a. Why would you need to practice this value on a wa'a? Who would you need to trust?
4. Review the three major topics of discussion in Lessons 1, 2 and 3: What things change and what things stay the same in a culture? Review Lesson 1 and its objectives.
5. Introduce the topic of Navigation and take students through "A Day in the Life of a Navigator."
 - a. Using the navigation graphics, introduce a day in the life of a navigator (sunrise, ocean swells, sunset, stars, groups of stars, moon, planets, and birds - manu o kū and noio).
 - b. Review what expanded landfall clues are – clues used by navigator to expand their land (i.e. flight patterns of birds, floating debris ...)
6. Discussion:
 - a. How do we know that our ancestors were successful in their travels? How do we know they eventually found Hawai'i? (Hint: the answer is right here in classroom)
 - b. Answer: We are here. The very fact that we are all in this classroom means that our ancestors were successful in finding Hawai'i. Otherwise we would not be here.
 - c. How did they get here? What kinds of tools did they use? Did they have a GPS? Radar? Watches to tell time? Compasses?
7. Introduce the Micronesian Star Compass Model or graphic
 - a. Have a student point out the rock that represents the east, west, north, and south while the class assists. From this point, the other cardinal directions can be determined (NE, NW, SE, SW).
8. Introduce the Hawaiian Star Compass Model or graphic
 - a. Conduct activity with a student volunteer and share how a navigator can find his/her four cardinal directions (N,S,E,W) using one simple clue – the Sunrise and rotating the canoe accordingly.
9. Activity: Four Cardinal Directions
 - a. Introduce and practice the four cardinal directions (North ('Ākau), South (Hema), East (Hikina), and West (Komohana). Display directional placards, ask students to stand and move in the direction that is asked for.
 - b. Share a story about getting lost in the mountains. If one should ever get lost in the mountains, he/she could find his/her way by looking for the sun (Is it rising? Is it setting?). How can you use the sun to tell directions?



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10. Have students turn to the handout, Activity: The Navigation Grid and complete.

11. Activity: Navigation Tarp

- a. If time allows, create an imaginary course line from pt. A to pt. B in your mind. Have students figure out your imaginary course by stepping and verbally saying out loud the direction (N, S, E or W) he/she steps in. The students' goals are to find your imaginary path and to practice their knowledge of the cardinal directions in Hawaiian.

12. Assessment: Hilina'i (Trust) Activity - Have students find a partner and place a blindfold over their partner's eyes. Spin their blindfolded partner three times. The non-blindfolded partner is the navigator who directs and guides his or her partner to a spot in the classroom chosen by the teacher. The other partner must listen and follow the directions of the navigator.

- a. The navigator uses simple cues such as: take one step 'ākau, take two small steps to hema etc. After the first partner successfully completes their task, exchange blindfolds and repeats the process with the second partner.
- b. Teacher to guide activity and make visual observations of student successes or failures.
- c. Discussion: What lessons did you learn as a navigator? What lessons did you learn when you were listening and receiving instruction from the navigator?

Follow-up Activities:

1. Distribute and have students complete the navigation worksheet Environmental Navigation Clues.
2. Have students read To Find the Way by Susan Nunes and The Island Below the Star by James Rumford. Prepare follow up questions for discussion. Also ask students to write and draw two things they enjoyed from reading the book.
3. Suggested teacher reading from PVS website: Hawaiian Star Compass and Wayfinding, Non-Instrument Navigation.

Additional Resources:

"Ka Huaka'i Ana - Voyaging." 'Ike Pono Hawai'i Hawaiian Traveling Resource Program-A Teacher's Guide. Honolulu: Kamehameha Schools, 2004.

Pūku'i, Mary K. 'Ōlelo No'eau Hawaiian Proverbs & Poetical Sayings. No. 2059. Honolulu: Bishop Museum Press, 1983.



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Website: www.pvs.hawaii.org "Hawaiian Star Compass.", "Wayfinding, or Non-Instrument Navigation." The Polynesian Voyaging Society, 1992.



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Ka Ho'okele 'Ana – Navigation

'Ōlelo No'eau - Hawaiian Proverbs or Wise Sayings

Mai ka ho'oku'i i ka hālāwai lā.
From zenith to horizon.

He waiwai Hawai'i - A Hawaiian value

Hilina'i – Trust

Nā Hua'ōlelo Hou – New Vocabulary

'akau – north

hema – south

hikina – east

hōkū – stars

hōkū hele – planets

komohana – west

lā – sun

laulima – working together cooperatively

mahina – moon

mālama – to care for

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Activity: The Navigation Grid

Instructions: For this activity, you will be following a route using Hawaiian navigational terms. To successfully complete this journey, you will need colored pens, pencils or crayons.

North/'Ākau

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South/Hema

1. Start at the square that has the wa'a, or canoe.
2. Travel 'ākau 4 squares. Color that square orange. Draw a dotted line from the wa'a to the orange square.
3. As you travel, continue to draw a dotted line from the last square you colored to the next square you color.
4. Travel hikina 6 squares. Color that square red.
5. Travel hema 5 squares. Color that square blue.
6. Travel komohana 4 squares. Color that square green.
7. Travel 'ākau 8 squares. Color that square yellow.
8. Travel komohana 4 squares. Color that square brown.
9. Travel hema 9 squares. Color that square black.
10. Travel hikina 2 squares. Color that square purple.
11. Travel 'ākau 2 squares. Draw a circle in that square. What does your chart look like?



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Activity: Environmental Navigational Clues

Celestial bodies rise in the _____ and set in the _____.

The _____ has four phases: new, first quarter, full and last quarter.

Sighting a bird in the early morning, you would look where it was _____ in order to find land. Sighting a bird in the afternoon or early evening, you would look where it was _____ in order to find land.

A school of _____ and a flock of _____ could be a sign that land is near.

Floating debris expand the landfall for a navigator. What are some examples of floating debris?
_____, _____

When the sun is too high, when it is overcast during the day, or when it is cloudy at night, what navigational clue can be used to steer a canoe?

These points of light guide a navigator to his destination. They are also known as the navigator's greatest friends. What are they?

Our ancestors believed that their _____ and _____ would guide them safely to distant lands.

WORD BANK

| | | | | |
|----------|-------------|----------|--------------|------|
| akua | coming from | going to | ocean swells | west |
| 'aumakua | dolphins | limu | 'ōpala | |
| birds | east | moon | stars | |



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Answer Key

