



Wayfinding

by Catherine Fuller

Aloha sixth graders!

As you enter the fourth quarter of your last year in the Lower School, it is important that you reflect back on the experiences you have had at 'Iolani School. Next August, each of you will embark on a new "voyage" through the Upper School and beyond.

This quarter, we will be exploring an idea called "wayfinding". You will find definitions on the following pages, but it is pretty much the way it sounds: WAY and FINDING. How will you find YOUR way on your voyage? What problems will you encounter? How will you solve them?

To understand wayfinding, we will be using Polynesian voyaging as a practical example. At the end of the quarter, you too will have your own short voyaging experience.

Best of luck and bon voyage!

Wayfinding encompasses all of the ways in which people and animals orient themselves in physical space and navigate from place to place.

- en.wikipedia.org/wiki/Wayfinding

Wayfinding is a tool to come to a more intimate understanding of the islands and ocean we live with. This unit will enable students to see that living in a safe and sustainable island environment takes a whole community.

Traditional Polynesian navigation—also called non-instrument navigation or **wayfinding**—means finding your way without any of the tools modern navigators take for granted. No GPS, no compass, no radio or satellite reports.

Instead, your clues about position, direction, and distance come from the stars, sun, and moon; from patterns in the ocean, including currents, ocean swells, and localized wave characteristics; from clouds, and even from wildlife. Navigators must also keep a running mental log of their progress, always maintaining a sense of the distance covered and the present location.

<http://www.exploratorium.edu/neverlost/#/navigation/basics>

Wayfinding has four core components:

1. Orientation: Where am I right now?
2. Route decisions: Can I find the way to where I want to go?
3. Mental mapping: Are my experiences consistent and understandable enough to know where I've been and to predict where I should go next?
4. Closure: Can I recognize that I have arrived in the right place?

<http://webstyleguide.com/wsg3/4-interface-design/2-navigation.html>

1. ORIENTATION: WHERE AM I RIGHT NOW?

- A. "Polynesian Migrations, Canoes and Wayfinding"
- B. Map – Polynesian Triangle
- C. "Rethinking Polynesian Origins: Human Settlement of the Pacific"
- D. "Founding the Polynesian Voyaging Society; Building and Naming Hokule'a"
- E. Where Am I? – Reflective Writing

2. ROUTE DECISIONS: CAN I FIND THE WAY TO WHERE I WANT TO GO?

- A. "E-X-P-L-O-R-E" Activity
- B. Reasons
 - 1. Why I Left My Island
 - 2. "Pa'ao From Samoa"
 - 3. "Two-Way Voyaging After Settlement"
- C. The Voyage - Crew
 - 1. "Rules of Conduct and Fostering the Right Attitude"
 - 2. "Insuring a Safe Crew and Canoe"
 - 3. Choosing a Crew
 - 4. "The Spirit of 'Ohana and the Polynesian Voyagers"
 - 5. The Right Qualities
 - 6. "Crew Positions"
 - 7. "Crew Responsibilities"
 - 8. "Captain's Responsibilities"
- D. The Voyage - Canoe
 - 1. Canoe Diagram: Hokule'a
 - 2. Design of Hokule'a
 - 3. Design of Hawai'iloa
 - 4. Building A Canoe, Part I
 - 5. Building A Canoe, Part II
- E. The Voyage – Resources
 - 1. What Will You Bring?
 - 2. "Ms. Fuller's Item List"
 - 3. "Packing List – What to Bring on Sail/Voyage"
 - 4. "Clothing"

3. MENTAL MAPPING: ARE MY EXPERIENCES CONSISTENT AND UNDERSTANDABLE ENOUGH TO KNOW WHERE I'VE BEEN AND TO PREDICT WHERE I SHOULD GO NEXT?

A. A New Society

1. Government and Law - "Pre-Contact Society"
2. Society and Class - "Hawaiian Royalty"
3. Economy and Sustainability - "The Story of Haloa: a Hawaiian Creation Story" and "Wai Ola: the Water of Life"
4. Religion - "In the Beginning: Hawaiian Gods"
5. Culture and Innovation - "Lono, Makahiki and Cook's Deification"

B. Issues

1. "Tangi'la and Karika"
2. "The Fate of Easter Island"

C. The Voyage - Course line

1. Diagram - Windward Ability of Canoes
2. Diagram - Average winds and currents
3. Diagram - Northeast and Southeast Trade winds
4. Diagram - Major Currents in the Pacific Ocean
5. "Sail Planning - Long Voyages"
6. Plan Your Voyage
7. Plotting the Course

4. CLOSURE: CAN I RECOGNIZE THAT I HAVE ARRIVED IN THE RIGHT PLACE?

A. My "Voyage"

B. Where Will I Be?

**ORIENTATION:
WHERE AM I RIGHT NOW?**

WHERE AM I?

As we start our unit on voyaging and exploration, we need to follow the first rule of wayfinding: to establish where we are. Using the questions below, write an essay describing your place in the world NOW, as a sixth grader. You should include an introduction and conclusion. Your essay should be about 2 pages. This assignment is worth 25 points.

Government and Laws: What rules do you have for yourself? For your “crew”? Who makes decisions for you?

Economics and Sustainability: How do you sustain yourself (get the things you need to survive)? What do you have to do in exchange for what is provided?

Religion: What part does religion play in your life?

Society and Classes: Who is your “crew”? What society/societies do you belong to? What is your place in those societies?

Culture and Innovation: What is your “culture”? How do you show your uniqueness?

**ROUTE DECISIONS:
CAN I FIND THE WAY TO
WHERE I WANT TO GO?**

WHY DO WE EXPLORE?

Whether we know it or not, we are natural-born explorers. There are many reasons why we explore. From birth we learn about life and how it works by exploring. No one can be satisfied for very long without exploring. Whether you are talking to someone next to you or looking around the room, you are exploring.

Directions:

1. You and your partners will construct a part of the EXPLORE poster on the wall.
2. Each team has a paragraph indicating one of the seven different reasons why humans explore.
3. At the beginning of the paragraph, there is a letter designated for your team. You will use this letter to start a sentence that summarizes your team's reason for exploring.
4. Think of a sentence that describes the ideas from your paragraph. It has to begin with the letter listed on the top of your paragraph. Write the sentence on a piece of paper.
5. Make an illustration to go with your sentence and add it to the paper.
6. Place your team's paper on the class poster and discuss your choices.

This project is worth 15 points.

Letter "E": People are curious about everything. We learn something new every day. If you get bored, you automatically look for something to do. That is the way we are. We like to learn new things. We also like to understand things and how they work. From the time you were born, you have been finding out how things work by exploring them. Curiosity makes us Explorers.

Letter "X": Exploration looks ahead, not behind. We do not want to be stuck in the past. We want to move ahead. Exploration gives us the sense that anything is possible. Exploration leads to knowledge and understanding, and means that you make the world a better place as you explore. People have always tried to leave the world a better place for future generations. Exploration is one way we can do that. It is a gift that people of the past give people of the future. (You may use X or some other letter to start your sentence.)

Letter “P”: Leaders in exploration can be leaders in the world today. In the past, leaders of voyages were the leaders of their society. They were responsible for finding food and resources, as well as ordering society in a new land. Settlers of new islands had to find ways to work together to survive and adapt to their environment. Any time you have to work with others, you learn about them and yourself. Working together with common goals helps people understand each other. It is very hard to go to war with people you understand. Working together also makes us more creative.

Letter “L”: New places can be helpful to us because they have raw materials and natural resources. New experiences bring us new knowledge. Exploring our world, or exploring beyond our world creates jobs and technology that make our world better. We might look for new ideas such as new sources of energy to make life better for ourselves and future generations.

Letter “O”: Exploration helps us understand our place in our community, our world and our universe. What might we find out from exploring new lands or new ideas that would benefit our lives? What might we learn to help us live better with our families? Our classmates? Our communities?

Letter “R”: Exploration opens up new places and new ideas. The United States was once called the “New World” because the people of Europe discovered it when they thought only an ocean existed there. The Polynesians believed that there were always new islands to be found in the oceans, and continually sought them out. With no new lands to discover on Earth, what are our choices?

Letter “E”: We love adventure and when we explore new places or have new experiences, it is the best kind of adventure. We have landed on the moon, sent spacecraft to the far reaches of the solar system. When humans explore, we make the world and the universe our classroom for learning. When people experience new things, they learn about themselves and grow as responsible and productive human beings.

WHY I LEFT MY ISLAND

Read “Pa’ao From Samoa” and “Two-Way Voyaging After Settlement.” If possible, watch the video “Voyagers”. These stories give reasons why ancient voyagers might have sought new islands. If you were an ancient Polynesian, what reason(s) would you have for leaving your island? Tell your tale in a 1-2 page story. You might choose to write journal style, or to look back at your story long after it happened. This assignment is worth 10 points.

CHOOSING A CREW

Many tasks need to be completed to ensure the success of a voyage, and they require the right people for the job. Read “Rules of Conduct and Fostering the Right Attitude” and “Insuring a Safe Canoe and Crew.”

With your group, brainstorm a list of jobs that crew members might have on board the canoe. Come up with explanations for the importance of each job, and rank them in order of importance.

With your group, on a separate paper, write one paragraph descriptions for each job. What tasks that person is responsible for and what equipment is needed for that job? What skills should each person have?

Who is in charge on the canoe? What does the leadership organization look like? Make an organizational chart to show your decisions. Add your paragraphs to the chart under each role.

Be prepared to explain your decisions to the class.

THE RIGHT QUALITIES

Read “The Spirit of ‘Ohana and the Polynesian Voyagers”. The canoe provides a limited space to work and live in, and crew members need to practice certain values in order to successfully achieve their goals while living so closely together. Think about what you learned and saw on our visit to see Hokule’a and Hikianalia. What three Habits of Mind should good crew members have? Why? What do you think happens if crew members DON’T practice these HoM?

Write one page explaining the HoM you chose and why they would be important. This assignment is worth 10 points.

BUILDING A CANOE, PART I

1. Use your sketches and measurements of Hawai'iloa to estimate the **volume** of the hulls. What is the square footage of each compartment? How many compartments are available for storage?
2. Estimate that food, water and equipment take up three-quarters of the storage space on the canoe. How much storage space is available per person? Would you want storage above or below deck?
3. What other features should your canoe have for safety? For comfort? Make a list of features you want to include. Which ones are most practical?
4. From the item lists given to your group, choose the 10 most important items to bring on your journey. Be able to explain why you chose those items. Will those items fit in your available space?

5. From the information you got on from crew members on our field trip to see Hawai'iloa, figure out which features of the canoes could be changed. Are there features that could be added?

WHAT TO BRING?

Take a look at the items on Ms. Fuller's list. Which ten items are the most important to bring on a voyage? You may include other items that are not on the list. Be prepared to explain to the class why your group chose those particular items. This assignment is worth 10 points.

MS. FULLER'S ITEM LIST

Fishing line and hooks
Toilet paper
Fresh water
Playing Cards
Cell phone
Knife
Sunscreen
Hat
Chocolate candy
Canned food
Fresh fruits and vegetables
Rain jacket and pants
Tarp
Buckets
Toiletries
Towel
iPod
VHF Radio
Laptop
GPS
Sunglasses
Extra rope
Carpentry tools
Journal and pen
Camera
Slippers
Sleeping bag
Navigational charts
Swimsuit
Hairbrush
iPad
Scrub brushes
Duct tape
Books
Compass

BUILDING A CANOE, PART II

Given the information you've gathered, would Hawai'iloa be big enough to carry your people and their belongings for a month? You are now going to design the ideal canoe for your group, using a process called "Design Thinking." You will be filling out evaluations of your efforts. Your final design and explanation will be worth 50 points.

Follow the steps listed below to arrive at your "destination":

Define

- What issue you are trying to resolve?
- Who are the users? What groups of people use the canoe and for what purposes? Fill out the "Needs to..." worksheet.
- What will make this project successful? Make a list of criteria by which you will decide if your group successfully completed the project. Make sure you save the list because we'll come back to it!

Research

- Review the history of the issue; remember any existing obstacles. Write down important ideas/facts.
- Review the information you got from the end-users (the crew), that gives you the most fruitful ideas for design.
- Identify the needs and motivations of your end-users, and areas of the canoe that might be redesigned to serve them. How will the crew function better?

Ideation

- Generate as many ideas as possible to serve the identified needs of your end-users on post-it notes. Stick them on the large paper. You may choose to fill in the following sentence: "How might we _____?" for each area of concern. Record your [brainstorming](#) session (save your post-it notes).
- Be specific about the issues you are discussing.
- With your issues, think of ways to correct them once they occur, but also think of why they exist in the first place. How could that issue have been prevented?
- *Do not judge or debate ideas.*
- *During brainstorming, have only one conversation at a time.*

Prototype

- Combine, expand, and refine ideas. Eliminate dead-end ideas.
- Plan your layout of the canoe and models of your innovations.
- Seek feedback.: present specific ideas to the client.
 - Focus on areas of concern
- *Reserve judgement and maintain neutrality.*
- Create designs for actual working prototypes of your innovations. Also, draw out the design for your canoe on a large sheet of paper.

Presentation

- Explain how your group approached each of the steps in the process. Explain your ideas and the thought behind them.
- Give a “tour” of your prototype to the class. What feedback did you get and how did it affect your design?
- Who are supporters and critics of the project? What feedback would they give you? How would you answer critics?

At the end of the design process, decide with your group whether you accomplished your goal. Why or why not?

**MENTAL MAPPING:
ARE MY EXPERIENCES
CONSISTENT AND
UNDERSTANDABLE
ENOUGH TO KNOW WHERE
I'VE BEEN AND TO
PREDICT WHERE I
SHOULD GO NEXT?**

A NEW SOCIETY

As your crew prepares to depart for your new homeland, you create a plan for what your new society will be like. How will your crew/family survive in their new setting? Will your crew organization work on land as well or will it have to change? Remember that you the first settlers on a new island.

Read the assigned articles for each day PRIOR to your discussions. Each article is an example of the choices the Hawaiians made for each topic.

Spend one day discussing each topic. You will have a couple of extra days to finish up.

Prepare a presentation introducing us to your society and explaining each of the six topics. Presentations should be about 20 minutes in length and will be on May 12 and 13. The presentation is worth 50 points.

Day 1: **Read “Pre-Contact Society”**
*Government and Law: Type of government? Democracy? Dictatorship? Aristocracy? Give your reasons for your government.
What are 5 important rules that your society emphasizes? What are the punishments for breaking these rules?*

Day 2: **Read “Hawaiian Royalty”**
Society and Classes: Is there a class system? Is it based on economic status? Heredity? Other factors? Or is everyone equal? If so, how is this possible? What are the role differences (if any) for men and women in society? Why?

Day 3: **Read “The Story of Haloa” and “Wai Ola: The Water of Life”**
Economy and Sustainability: What type of economy is best suited for your society? What are you going to produce based on your resources? How will you get what you need to survive? Will everyone produce what they need or will people have specific jobs? Will resources be divided equally?

- Day 4: Read “In the Beginning: Hawaiian Gods”
Religion: What religious beliefs will guide your society? Who is the head of the religion? Is religion separate from government or connected? Does religion affect any other themes? What rituals does your culture practice? Where?
- Day 5: Read “Lono, the Makahiki and Cook’s Deification”
Culture and Innovation: What are your cultural practices? Do you have holidays? What is your music, food, dance or art like? What behaviors do people value?
- Day 6: Read “Tangiia and Karika” and “The Fate of Easter Island”
Issues: What issues do you think your society will face as it grows? Are these problems avoidable? What problems do you want to avoid in your society? How will you deal with biological or environmental disasters?

CLOSURE:

**CAN I RECOGNIZE THAT I
HAVE ARRIVED IN THE
RIGHT PLACE?**

MY VOYAGE

Now that you have planned for a voyage and thought about how you would create your own society, it's time to apply these ideas to yourself. Your task is to create a *MAP* of the voyage you will take from now. Use the four principles of wayfinding to think about *YOUR* voyage and where you are going. Your map will be worth 30 points.

1. *Where am I am right now?*

- A. *What is my part in my family?*
- B. *What is my part in my school?*
- C. *What is my part in my community?*

Mark and label your current location on your map. What does it look/feel like?

2. *Can I find the way to where I want to go?*

- A. *What is your "destination"?*
- B. *What plan do you have to get there?*

Mark your path, as well as any "islands" you might stop at along the way.

3. *Are my experiences consistent and understandable enough to know where I've been and to predict where I should go next?*

- A. *Who is on your "crew"?*
- B. *What "supplies" will you need to bring?*
- C. *What difficulties will you face? How will you deal with them?*

Add a "crew" list, a "supply" list and mark potential "storms" on your map.

4. *Can I recognize that I have arrived in the right place?*

- A. *How will you know when you have reached your "destination"?*
- B. *What do you think you will do next?*
- C. *Will you be satisfied at that point?*

Mark and label your final destination on your map. What does it look/feel like?

Be prepared to briefly explain your "voyage" and your map in class.

WHERE WILL I BE?

Now that you've determined how a new society might be set up following the five themes of social studies...how will these themes apply to your life at your destination?

Compare and contrast these answers to your answers in your original "Where Am I?" essay? Why are they the same or different? How did you get from your original "Where Am I?" to your future state? Your written answers should correspond to the map of your "voyage".

How does the voyage of your life compare to a real voyage? Use information from the sources you have read and watched this quarter, and throughout the year, to support your answer.

Your essay should be a minimum of four pages, and should have an introduction and conclusion. Your essay will be worth 50 points.

Government and Laws: What rules will you have for yourself? For your "crew"? Who will make decisions for you?

Economics and Sustainability: How will you sustain yourself (get the things you need to survive)?

Religion: What part will religion play in your life?

Society and Classes: What will be your place in society? Will your role change? Who will be your "crew"?

Culture and Innovation: What will your "culture" be? What innovations will you make? What will make you unique?

PLAN YOUR VOYAGE!

Start with the weight of the empty canoe. 15,000

What is the total weight of your crew? _____

How many gallons of water will you need? What will it weigh?
Plan on 0.8 gallons per person per day. Water weighs _____
8 lbs/gallon.

Plan on 5000 lbs of equipment 5000

Personal gear for crew members (50 lbs each) – total _____

What is the average weight of a day's meals (plan on 30 days)? _____

What is the total food weight for your voyage? _____

Without exceeding 24,000 lbs total weight, how much food
can you carry? _____

What is the total weight of the canoe when it is loaded? _____

What can you change to reduce the load weight of the canoe? How will changing these variables affect the crew, the canoe or the voyage? Explain.

PLAN YOUR VOYAGE!

In order to fill out the worksheet above, you will need to find out certain information.

1. Find the total weight of your crew.
2. Figure out how many days you will be sailing. Each person gets 0.8 gallons of water PER DAY. How many gallons total?
3. Weigh your dinner. Don't forget to subtract the weight of the plate. Add 1/3 more weight for packaging of the food. Add the total weight of dinners of the class. Based on 3 meals a day for the length of your voyage, what is the total food weight you expect to carry?

PLOTTING THE COURSE

You and your family navigators meet secretly to plan your voyage to your new homeland. Your route will determine what you bring and how many people you will be able to take with you. Assume that the closest the canoe can sail to the wind is 55 degrees. Use information you learned in science, from the field trip or other sources to help you.

Refer back to the article on settlement.

1. Where is your crew going? Name the island and give both latitude and longitude.
2. What is the total distance of your voyage? What direction do you need to sail?
3. Where do winds generally come from in the North Pacific? In the South Pacific? How fast are they?
4. Where do ocean currents come from in the North Pacific? In the South Pacific? How fast are they?
5. Will the wind be in your favor in summer? In winter? If the winds come from an unfavorable direction, what are your options?
6. Assuming you can sail $1/3$ of the wind speed, how fast can you sail? Use the formula $distance = rate \times time$ to calculate how long your journey will take. Assume that the maximum number of days you can be at sea is 30. Will your voyage require multiple segments? If so, where can you stop along the way to get more supplies?