



Navigations 7

Student Inquiry Guide

Use this guide to explore the mysteries of the Universe. Look for clues to help you navigate through `Imiloa's exhibits and collect data to share with classmates. Keep your eyes and ears open ... and watch for exciting detours.

Origins

Through a Forest and Beyond



Clue: Navigate through a koa forest to reach the summit of Maunakea. As you walk through Piko, think about the early Hawaiians and explorers who climbed this mountain and why they did it. Look at the journals in which their stories have been recorded and read these three entries:

Find: "The Best is on Maunakea"

Investigate: What is an adze?
Why is Maunakea the best adze
quarry in Hawai`i?

Log: *(Answer here.)*

Find: "Maunakea is a Jewel"

Investigate: Who called
Maunakea a "jewel"? Why?

Log: *(Answer here.)*

Find: "Waters Close to the Sky"

Investigate: What is not found
in Lake Wai`au? Why do you think
that is?

Log: *(Answer here.)*



Go back in time! Imagine that you are a “chipper,” and that you’re about to hike to the quarry on Maunakea to make stone adzes for your `ohana. Think about the extreme conditions you may encounter while you’re there. Make a list of things you’ll need during your journey.

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Clue: Kumulipo Pre-Show Area



Find: “Pairing Similar Names” display

Investigate: Which plant is paired with the Pākuikui fish? How are their names similar?

Log: *(Answer here.)*

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Clue: Kumulipo Theater



Observe: Watch and listen to the Hawaiian Kumulipo chant of origins.

Investigate: According to the Kumulipo chant, life emerged from what? What happened next?

Log: *(Answer here.)*



Stand in front of Genealogy Wall and observe the people shown in the drawings and photographs. Think about your ancestors. What traits do you have in common with them? How are you different?

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Clue: Turn the corner and explore the origins of life on Earth. What is the source of atoms from which life emerged? Are scientists just guessing—or do they have real evidence? Discover for yourself by looking at these displays:



Find: "Life from Space?"

Investigate: Besides meteorites, what objects have showered our planet? How do scientists know this?

Log: *(Answer here.)*

Find: "Life from the Deep Blue?"

Investigate: What is released from volcanic vents on the sea floor? What life forms are found near these vents? How did scientists first see one of the volcanic sites?

Log: *(Answer here.)*

Find: "Life from the Waves?"

Investigate: Four billion years ago, life may have evolved from what? How did scientists reach this conclusion?

Log: *(Answer here.)*



You've just discovered what scientists think about the origins of life on Earth. If you could ask one of them a question about the origin of your atoms, what would you like to know?

What's Out There?



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Clue: Investigate stuff in our Solar System and search for life beyond Earth. Check out these Astronomy Origins exhibits to learn more about what's "out there":

Find: "It's Not Made of Cheese"

Investigate: Our moon is made of material similar to which part of Earth? Using this evidence, briefly describe how the Moon formed.

Log: *(Answer here.)*

Find: "It's a Massive Mixed Plate"

Investigate: Objects in our Solar System. Pick one of the objects on display and write two facts about it.

Log: *(Answer here.)*

Find: "Is there life out there?"

Investigate: Chances of life are highest in which type of galaxy? What part of the galaxy and why?

Log: *(Answer here.)*



What's cooking in the Cosmic Kitchen? What ingredients must come from the universe in order to make an apple pie?

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Clue: How do astronomers see what's "out there" in space? How can they see stars hidden by clouds of cosmic gas and dust? Discover how below.



Find: "An infrared camera detects light ..." exhibit

Investigate: Follow the steps listed below to understand how infrared light is used to help astronomers see far out into space:

1. Stand behind the camera, and look at the window with your eyes.
2. Can you see through the window?
3. Ask a friend to go stand behind the window and wave at you.
4. Can you see him/her?
5. Point the camera at the window and look at the computer screen by the camera.
6. What do you see now?
7. Watch the computer screen as you point the camera at other objects in the exhibit.
8. Is there a difference in how they look?

How is infrared light used in your everyday life?

Log: *(Answer here.)*



Do you have it in you? Chances are, something you LIKE to do could lead to a job in astronomy. Using the touch screen in this display, take the quiz to discover if there's a job that might suit you. List two job titles that interest you and tell why.

Voyaging

Away From the Familiar

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Clue: You've explored "out there" in space, and now it's time to explore another "out there" place—the vast Pacific Ocean. Experience the journeys of early Polynesian wayfinders and Hawaiian voyagers today as they sail from familiar to distant lands.

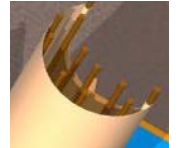
Find: Expanding Our Boundaries



Investigate: What/where is Polynesia? What three points define the "Polynesian triangle"? What does this triangle represent?

Log: *(Answer here.)*

Find: Canoe deck (*on floor*) and lauhala sail displays



Investigate: What provisions are needed for an ocean voyage? Who prepares the supplies before a canoe sets sail? Why is this important?

Log: *(Answer here.)*

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Clue: Traditional Hawaiian voyagers observe constellations in the night sky, ocean waves and swells, birds, and clouds to navigate their canoes.

Find: Take a Voyage (touch-screen monitors around model of `Imiloa canoe)

Investigate: Track the progress of a canoe on its planned course from Tahiti to Hawai`i. Watch for changes in the clouds and ocean as the canoe sails north. When you see a change, touch the clouds or ocean to hear from an experienced navigator what it means. Describe two changes that you observed and what they mean.

Log: *(Answer here.)*



Find: The Star Compass display panel

Investigate: Is the star compass an actual tool? How does it work?

Log: *(Answer here.)*



Imagine life on a voyaging canoe as you sail thousands of miles across the open ocean. Think about these things: How does the air feel? How does the sea smell? What sounds do you hear? What do you see? What will you eat for dinner—and how does it taste? Who or what will you miss the most while you are at sea?

Rhythms of Life



Clue: Hawai`i Music Traditions. One way that people connect to each other and their world is through music.



Find: Listening stations (computer monitors and headphones)

Investigate: Stories about Hawaiian music and how it is played today. Discover answers to these questions:

1. What influence does the hula gourd have on playing an ukulele?
2. What three factors contributed to the development of falsetto singing in Hawai`i?
3. How are Hawaiian poetry and Hawaiian lei alike?

Log: *(Answer here.)*



4D2U Theater. Put on a pair of 3-D glasses and take an exciting 7-minute journey through space and time to the most distant places known in our Universe. It's a three-dimensional experience—so why is the theater called 4D2U? What is the fourth dimension? Ask an `Imiloa staff member or volunteer if you're not sure about the answer.



Quests and Questions

Now that you navigated your way through `Imiloa, reflect on what you've learned about origins and voyaging.

- ◆ Create a Venn diagram to compare and contrast the skills required to voyage into space and across the ocean. How are they similar? How are they different?
- ◆ Think of a question about life on Earth or somewhere else in the Universe. Where and how will you begin your quest to find the answer?
- ◆ Is there a difference between what you can see in the natural world and what scientists discover?
- ◆ Consider the technology, provisions, and safety measures required to establish a base on the Moon. If you could be involved in this project, what role would you like play? What aspect of the mission interests you the most?

Genealogy Wall

Kumulipo Theater



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Origins

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Cosmic Kitchen



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Maunakea Virtual Observatory



Voyaging

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Piko

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Navigations 7

Clusters of Clues

This map shows where to find clues as you explore mysteries of the Universe.

Start Here