Navigations 7
Teacher Guidelines

Navigations 7 is an inquiry guide in which students encounter questions, conduct searches, interpret data and discuss findings as they explore origins and voyaging in the Hawaiian culture and astronomy. Based on recommendations of the National Academies' Advisors to the Nation on Science, this guide engages students in the practice of science and promotes curiosity about the Universe and their place in it. The guide also strives to involve students in activities that perpetuate traditional ways of knowing. The goal is to help students advance their knowledge of the natural world while remaining grounded in their culture and maintaining local perspectives.

Navigations Teacher Guidelines for each grade level include learning outcomes, HCPS III Benchmarks, and Nā Honua Mauli Ola Guidelines. Information on what to do before, during and after field trips is also provided. Teachers are encouraged to review these pages and use the information to prepare their students for a class field trip to `Imiloa.

Navigations 7 Learning Outcomes

Students will:

- Explore the origins of life from two perspectives: cultural and scientific.
- Investigate components of our Solar System, discover tools used by astronomers to study what's "out there" in space, and think about the possibility of life beyond our Solar System.
- Explore the tools and skills required for Hawaiian voyaging and learn about traditional navigation techniques.
- Use clues to investigate and find answers to questions about origins and voyaging.

Pre-Visit Information

Teachers can use all or parts of the **Navigations 7** inquiry guide to enhance their students' experience at `Imiloa. To use the guide, teachers must download and print a copy of it for each student—and for each teacher and chaperone accompanying the group. Student inquiry guides are not available at `Imiloa.

For descriptions of all exhibits on display at `Imiloa, go to the Education-Field Trip website page.

Note: K-12 teachers can visit `Imiloa to orient themselves on the Center prior to their scheduled field trip at no charge. Pre-trip planning visits must be arranged in advance. Contact Gail Loeffler at 969-9729 or gloeffler@imiloahawaii.org to schedule.

The following text is designed to be used as a springboard for *pre-visit* discussion to inspire students' anticipation of their `Imiloa experience. However, it may also be used as a "script" for teachers and chaperones to guide students *during* their visit.

Introduction

You are about to explore origins of the universe through a Hawaiian chant and then through discoveries by astronomers. Your teacher or chaperone will have a map that you can follow as you search for clues about the universe. ***Think about this:*** As you walk into the koa forest, where are you looking first? What do you see or hear that's unusual?

Origins

Through a Koa Forest and Beyond

Walk carefully through the koa forest leading to the Piko area. As you approach Maunakea, look down at stone flakes from an adze quarry atop the sacred mountain, gaze up at the starry night sky above it, and look at the model of Lake Wai`au. When you pass through Piko, you will discover stories of personal origins and connections. Knowing and honoring your origin is an important tradition in Hawaiian culture. When you hear the Kumulipo Chant, you will begin to understand the Hawaiian story of origins and how life came from the sea. Past the genealogy wall, you turn a corner and learn about origins from an astronomer's view. ***Think about this:*** What do you know about where your parents/grandparents came from?

What's Out There?

Our Solar System is part of the Milky Way Galaxy. Astronomers use a variety of tools to follow clues and gain bits of information about it and other galaxies. They've studied celestial objects for years, and yet there is still much to be learned and questions to be answered … such as "Is there life out there?" ***Think about this:*** When you look up at the sky at night, what do you notice about the stars? From what you know about what's needed for life, do you think it's possible there is life on another planet?

Voyaging

Away from the Familiar

Exploration connects new places, people, and ideas. Voyagers today, as did early Polynesians, combine past knowledge with new tools or technologies to discover unfamiliar places. Voyaging requires navigational skills, intensive preparation, and people working together before and during a journey across the ocean. As you explore this section of the Exhibit Hall, you will learn about life aboard a voyaging canoe and traditional navigation techniques. ***Think about this:*** What traditions do you and your parents share? Are they the same traditions your parents shared with your grandparents? How have they changed? Do you think you have the skills required to voyage across the Pacific? Do you have the skills to become an astronomer?

Rhythms of Life

People often use music to express themselves and the rhythms of their lives. Instruments and styles of music change with time and between different cultures. Explore the rhythms of traditional Hawaiian music and how it connects people. ***Think about this:*** Is there a musical connection between you and your friends? What kind of music do you like? Do you think you will like the same kind of music 10 years from now? 20 years?

During Field Trip

Distribute Inquiry Guides to students and accompanying chaperones. This includes a map showing the locations of Clues, which orient students to each activity site in the guide. Tell students which parts (if not all) of the guide they are to complete. Teachers and chaperones should work with students to help them complete the activities. Detours encourage students to discover more. STOP signs strive to get students to use their imaginations and think about experiences beyond `Imiloa.

Post-Visit

Q² Use *Quests and Questions*, the last section of the student inquiry guide, after a field trip to encourage students to share their new knowledge and inspire further discussion about their `Imiloa experience.

Extend the Experience – Suggested Activities

Apply knowledge gained through Navigations 7 in the following activities:

- Create a logo or bumper sticker based on your new knowledge about our Solar System.
- Draw a variety of wave patterns to reflect calm, rough, or stormy seas.
- Imagine that you get to interview an astronomer or navigator. Write down questions that you would ask him/her.

HCPS III Benchmarks

SC.7.1.3	Explain the need to revise conclusions and explanations based on new scientific evidence.
SC.7.2.1	Explain the use of reliable print and electronic sources to provide scientific information and evidence.
SC.7.5.3	Explain that small differences between parents and offspring could produce descendents that look very different from their ancestors.
SC.7.5.5	Explain how fossils provide evidence that life and environmental conditions have changed over time.
LA.7.1.2	Use a variety of grade-appropriate print and online sources to research an inquiry question.
LA.7.2.4	Use paraphrasing and summarizing to explain a text.

Nā Honua Mauli Ola Guidelines

1.1	Utilize a variety of learning materials and strategies that promote cultural traditions, language, history, and values.
1.8	Understand and appreciate the importance of Hawaiian cultural traditions, language, history, and values.
4.7	Utilize their knowledge, skills, and ways of knowing from their own culture to learn about the larger world community.