

# THE MENEHUNE AND THE BIRDS

Kēhau, a young Menehune boy, and his best friend, a little 'elepaio bird, discover that a group of men has been killing the birds of the Kaua'i rainforest in order to harvest their feathers faster. Kēhau and 'Elepaio seek out the Menehune Chief and his warriors to help save their friends and find a way to change the habits of these men or risk losing the beautiful birds forever.



*Animated Video*

***E Ho'omau!*** is the imperative form of the Hawaiian verb meaning *to persevere, to persist*. It urges us to learn from the past and to perpetuate the good.

# THE MENEHUNE AND THE BIRDS

**Scope and Sequence**  
 Theme: **Mālama ika ‘āina**  
 Value: Respect the Land

**Strand** **Cultural Anthropology: Systems, Dynamics, and Inquiry**

**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.
- CULTURAL SYSTEMS AND PRACTICES: SS.4.6.1 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.
- Common Core 4.RL.7, 4.RL.10, 4.RL.4

**Concepts/Themes** **Cultural Systems and Practices:** Hawaiian culture is the basis of a complex society that uses legends and significant heroes and gods to describe models of social mores.

**Adaptation of Organisms      Interdependence of Organisms      Cycles of Matter & Flow of Energy**

**Strand** **Life and Environmental Sciences**

**Standards** **5: DIVERSITY:** Understand genetics and biological evolution and their impact on the unity and diversity of organisms.

- Unity and Diversity: SC.4.5.2 Describe the roles of various organisms in the same environment.
- Unity and Diversity SC.4.5.3 Describe how different organisms need specific environmental conditions to survive.

**3: ORGANISMS AND THE ENVIRONMENT:** Understand the unity, diversity, and interrelationships of organisms, including their relationship to cycles of matter and energy in the environment.

- Cycles of Matter and Energy SC.4.3.1 Explain how simple food chains and food webs can be traced back to plants.
- Interdependence SC.4.3.2 Describe how an organism’s behavior is determined by its environment.

NATIONAL SCIENCE FRAMEWORK  
 LS 3.A: Interdependent Relationships in Ecosystems  
 LS3.B: Flow of Matter and Energy Transfer in Ecosystems  
 LS3.C: Ecosystems Dynamics, Stability, and Resilience  
 LS4.C: Natural Selection and Adaptation

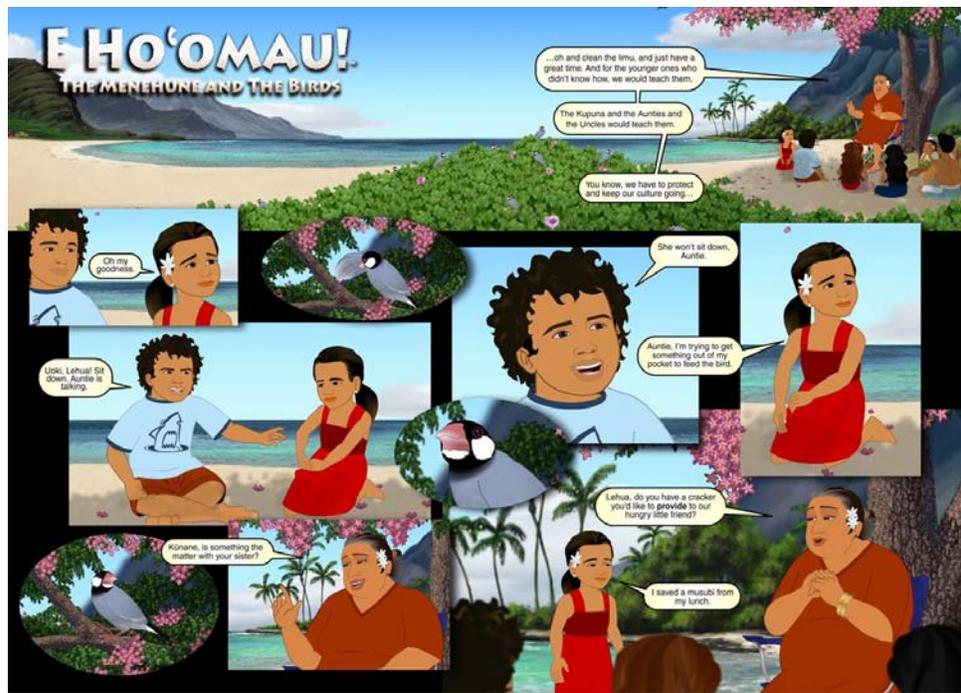
**Concepts/Themes** (1) The adaptations of an organism allow it to survive in an environment. (2) Organisms respond to each other in their environment. (3) In a food chain, every organism can be classified as a producer (plants), a consumer (herbivores, carnivores, omnivores), or a decomposer (fungi, bacteria, mold, mildew, yeast).

	<b>Adaptation of Organisms</b>	<b>Interdependence of Organisms</b>	<b>Cycles of Matter &amp; Flow of Energy</b>
<b>Science Words</b>	adaptation (n.)	hemisphere (n.)	force (n.)
	habitat (n.)	revolve (v.)/revolution (n.)	gravity (n.)
	organism (n.)	orbit (n., v.)	galaxy (n.)
<b>High-Utility Words</b>	defend (v.)	maintain (v.)	attract (v.) /attraction (n.)
	definite (adj.) definitely (adv.)	expansion (n.)	accelerate (v.)
	evidence (v.)	occur (v.)	dense (adj.)
	nutrient (v.)	equator (n.)	energy (n.)
	structure (n.)	represent (v.)	telescopic (adj.)
	survive (v.) survivor (n.)	reflect (v.)	motion (n.)
	transform (n., v.)	visible (adj.)	convert (v.)

<b>Vocabulary and Word Learning Strategies</b>		
<b>Text Structures (Cause and Effect / Compare and Contrast)</b>		
<b>Strand</b>	<b>Language Arts</b>	
<b>Language Arts</b>	<b>Standards</b>	<p>1. <b>Reading: CONVENTIONS AND SKILLS:</b> Use knowledge of the conventions of language and texts to construct meaning for a range of literary and informational texts for a variety of purposes.</p> <ul style="list-style-type: none"> <li>VOCABULARY AND CONCEPT DEVELOPMENT: LA.4.1.1 Use new grade-appropriate vocabulary, including homophones and homographs, learned through reading and word study, including root words, affixes, and word origins.</li> <li>CC RI CRAFT AND STRUCTURE: 4.L.4 Determine the meaning of general academic and domain-specific words or phrases in text relevant to grade 4 topics.</li> <li>CC L VOCABULARY ACQUISITION AND USE: 4.L.4b Use common, grade-appropriate affixes and roots as clues to the meaning of a word.</li> </ul> <p>2. <b>Reading: READING COMPREHENSION:</b> Use reading strategies to construct meaning from a variety of texts.</p> <ul style="list-style-type: none"> <li>UNDERSTANDING TEXT STRUCTURES: LA.4.2.2 Use organizational patterns (compare and contrast / cause and effect) to access and understand information.</li> <li>CC RI CRAFT AND STRUCTURE: 4.RI.4 Describe the overall structure (e.g., comparison, cause/effect) of events, ideas, concepts, or information in a text or part of a text.</li> </ul>
	<b>Concepts/Themes</b>	<p>Language processes (reading, writing, listening, and speaking) are meaning-making processes that involve thinking, discovering, and ordering.</p> <p>Language follows conventions or rules. These rules help ensure effective communication. Knowledge of conventions is needed to comprehend and construct text (print, media, electronic).</p>
<b>Reading</b>	<b>Cause and Effect / Compare and Contrast</b>	
<b>Vocabulary</b>	<b>Word Part: -er, -or</b>	<b>Word Part: -able, -ible</b>
		<b>Word Part: -tion, -sion, -ion, -ation</b>



Science Text-Sets



Graphic Novel



### THE MENEHUNE AND THE BIRDS: ADAPTATIONS IN HAWAII'S RAINFOREST

Lesson 1	Developing background	6
Lesson 2	Understanding <i>Adaptations in Hawaii's Rainforest</i>	19
Lesson 3	Extending understanding of <i>Adaptations in Hawaii's Rainforest</i>	37
Lesson 4	Adapting and integrating the understanding of <i>Adaptations in Hawaii's Rainforest</i>	47
	Vocabulary practice	

### THE MENEHUNE AND THE BIRDS: INTERDEPENDENCE IN HAWAII'S RAINFOREST

Lesson 1	Developing background	1
Lesson 2	Understanding <i>Interdependence in Hawaii's Rainforest</i>	9
Lesson 3	Extending understanding of <i>Interdependence in Hawaii's Rainforest</i>	37
Lesson 4	Adapting and integrating the understanding of <i>Interdependence in Hawaii's Rainforest</i>	48
	Vocabulary practice	

### THE MENEHUNE AND THE BIRDS: FLOW OF ENERGY IN HAWAII'S RAINFOREST

Lesson 1	Developing background	1
Lesson 2	Understanding the <i>Flow of Energy in Hawaii's Rainforest</i>	11
Lesson 3	Extending understanding of the <i>Flow of Energy in Hawaii's Rainforest</i>	38
Lesson 4	Adapting and integrating the understanding of <i>The Flow of Energy in Hawaii's Rainforest</i>	48
	Vocabulary practice	

### THE MENEHUNE AND THE BIRDS:

# ADAPTATIONS IN HAWAI'I'S RAINFOREST

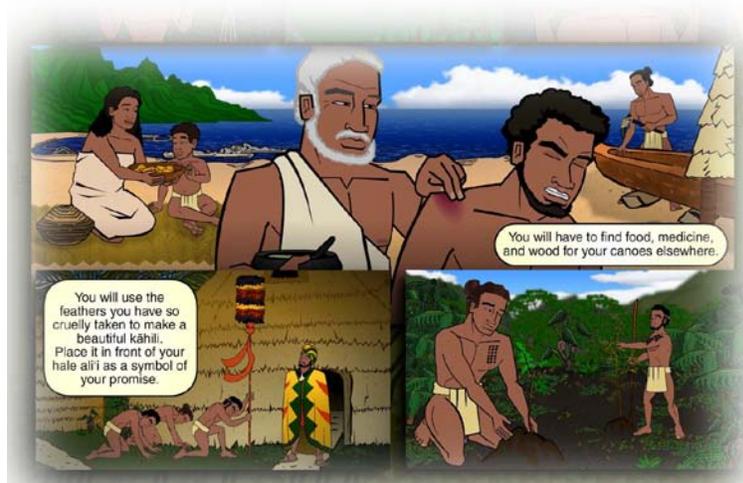
## Lesson 1

### Table of Contents

#### Developing Background *Focus, Make Connections, and Reflect*

**Driving Question:** *Is the rainforest our kuleana? Why should it be?*

Learning Engagements	Pages
I. Reflecting and connecting	7
II. Establishing purposes	8
III. Making predictions and setting viewing purposes (See Appendix 1.1: <i>Adaptations</i> Wall Chart)	9 12
IV. Validating and self-assessing	9
V. Imagining through storyboarding (Appendix 1.2: <i>Adaptations</i> Storyboard)	10 13
VI. Completing kuleana four squares (Appendix 1.3: <i>Adaptations</i> Four Square)	10 16

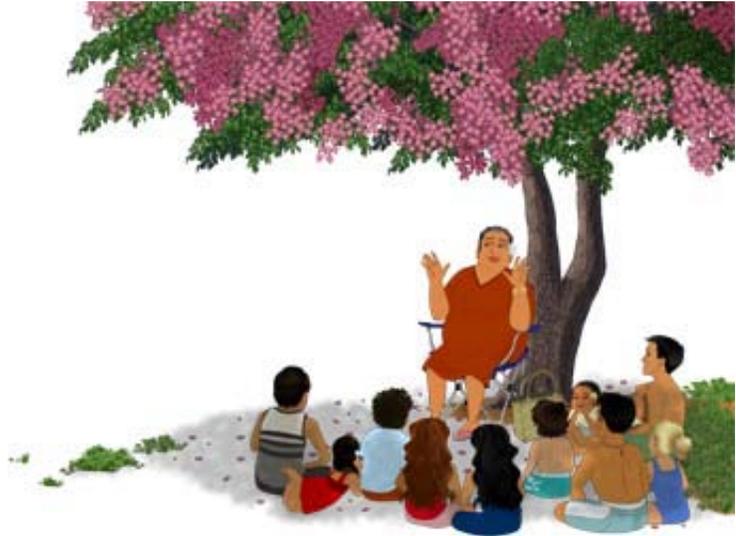


# The Menehune and the Birds: Adaptations in Hawai‘i’s Rainforest

## Lesson 1

*Mālama ika ‘āina* (Respect the Land)

“Kēhau was a Menehune child who lived in the Lā‘au valley on the island of Kaua‘i. The menehune looked out for the many birds that lived in the forest, and Kēhau took this kuleana quite seriously because he loved the birds with all his heart.”



### Lesson Notes

#### I. Reflecting and Connecting

##### Concepts/Themes

Traditional practices, beliefs, values, and behaviors are elements of culture and contribute to the preservation of culture.

Students understand the concept of kuleana from a variety of contexts (in the forest, at school, at home, within the community, etc.).

##### Objectives

1. Students contribute to the discussion by sharing one of their statements from their journal on whether the rainforest is their kuleana.
2. Students express their view of whether the rainforest is their kuleana by creating an individual poster.

### Developing Background

Focus, Make Connections, and Reflect

**Driving Question:** *Is the rainforest our kuleana? Why should it be? What can we learn about kuleana through the story, The Menehune and the Birds?*

#### I. Reflecting and Connecting

Students record at least two personal responses to the driving question in their *E Ho‘omau!* journal. Related questions might include: (a) *What does kuleana mean to you?* (b) *What is an example of your kuleana?*

1. Hold a discussion on the driving question starting with students sharing one idea from their journal. Related questions might include: *Where is the nearest rainforest? When was the last time you visited one? Is the rainforest our kuleana? Why, or why not?*
2. The responses reflect student’s personal experiences and provide insights into the background information they bring to the lesson. They may also include ideas that were developed in lessons related to the animated stories, *Pele Searches for a Home* and *Why Māui Snared the Sun*.

**Length**

45 minutes

**Materials**

1. Poster material: poster or drawing paper.
2. Colored pens or pencils.
3. Access to a computer if completing a digital poster.

**II. Establishing Purposes****Objectives**

1. Students orally contribute information about what they know about the menehune.
2. Students identify elements of the story's setting and values of early Hawaiian people by making inferences from the animated story.

**Length**

15 minutes

**Materials**

1. Animated video: *The Menehune and the Birds*.
2. Video projector / DVD Player.

3. Display student responses to show the student development of the concept through the lessons of *The Menehune and the Bird*.
  - a. Students create individual 8 ½ x 11 posters of their own interpretations of their kuleana of the rainforests. This could also be completed after the students watch the animated video.
  - b. Alternative: Record responses on a class wall chart.

**Assessment:** Student posters depict their idea of their kuleana of the rainforest.

**II. Establishing Purposes**

Establish the purpose for the story and confirm, or add, to the driving question, *is the rainforest our kuleana? Why should it be? What can we learn about the kuleana of the rainforest through the story, The Menehune and the Birds?*

1. Watch the introduction of the animated story, *The Menehune and the Birds*.
  - a. *What are clues in the introduction that tell you when this story took place, where this story took place, and what this story is about?*

Elicit possible responses from the students:

- a. It took place many, many years ago, in the Lā'au Valley on Kaua'i.
  - b. It is about the menehune whose kuleana was taking care of the birds in the forest.
  - c. It is about people who didn't think the forest was their kuleana.
  - d. Expand on the responses and extend to questions that relate to the rainforest, kuleana, and the menehune.
2. *What are clues in the introduction about the values of the early Hawaiian people?*
    - a. Assume responsibility for one's role in perpetuating a way of life.
    - b. Understand one's kuleana of the rainforest.
    - c. Follow the rules of the forest to ensure sustainability of resources.

**Assessment:** Observe student responses during discussions. *Are students able to make inferences about where the story took place and predict what the story might be about from watching the introduction?*

**III. Making Predictions**  
**IV. Validating and Self-Assessing**

**Objectives**

1. Students contribute at least two ideas to the list of ideas they generated during the pre-viewing discussion.
2. Students are able to validate their predictions with examples from the video.

**Length**

45 minutes

**Materials**

1. DVD player.
2. Projection Screen.
3. *The Menehune and the Birds* animated story.
4. Journal.
5. Appendix 1.1: Adaptations Wall Chart.

**III. Making Predictions and Setting Viewing Purposes**

Before watching Chapter 2 of the animated story, *The Menehune and the Birds*, set the viewing purposes.

1. Ask students, *what do you expect to learn about kuleana in this story?*
2. Divide students into groups to watch for ideas that were generated. Possible focus ideas may include:
  - a. Examples of kuleana in the rainforest among the people, the organisms, and the menehune.
  - b. Rules of the forest that were followed by the menehune and the people.
  - c. Words and phrases to describe the forest where the menehune lived.
3. Record pre-viewing questions on the wall chart. (See Appendix 1.1: *Adaptations* Wall Chart)

**IV. Validating and Self-Assessing**

1. Watch Chapter 2 of the animated story, *The Menehune and the Birds*.
2. As a class, complete the class wall chart and discuss what students observed.
3. Other discussion questions may include:
  - a. *What can we learn about the kuleana of the rainforest through the story, The Menehune and the Birds?*
  - b. *What value does the story have for boys and girls today? What value does it have to you? Is the rainforest our kuleana? Why should it be, or not be?*
4. Students revisit their journals. Add at least two more ideas to the questions: *Is the rainforest our kuleana? Why should it be? What is an example of your kuleana?*

**Assessment:** Review student journal entries, or ask students to share. *Did students validate or add to their perspective of whether the rainforest is their kuleana?*

## V. Imaging through Storyboarding

### Objective

Students complete a storyboard depicting each element of the Storyboard Checklist.

### Length

45 minutes

### Materials

1. DVD player.
2. *The Menehune and the Birds Animated Story*.
3. *The Menehune and the Birds graphic novel*.
4. Appendix 1.2: *Adaptations Storyboard*.

## VI. Completing Kuleana Four Squares

### Concept/Theme

Language follows conventions or rules. These rules help ensure effective communication. Knowledge of conventions is needed to comprehend and construct text (print, media, electronic).

### Objectives

1. Student contributes to group completion of a four

## V. Imagining through Storyboarding

1. Watch Chapter 3 of the animated story, *The Menehune and the Birds*.

Chapter 3 starts with the menehune chief talking to the men, telling them to atone for their deeds by making the forest *pono* (right).

The story ends with aunty saying, “Many things happened that affected the forest, and many of the bird songs that our ancestors enjoyed are no longer heard today. Some birds have become scarce, many others did not survive.”

But, “It’s always a hopeful story when people are able to learn the error of their ways and to make better choices next time.”

1. Ask students: *What were “the many things that affected the forest?”* Using the information from the story, create up to six frames of what you think may have happened so that “we no longer hear the bird songs that our ancestors enjoyed.”
2. Review the storyboard checklist.
3. Provide students with Appendix 1.2 *Adaptations Storyboard*.
  - a. Provide students with *The Menehune and the Birds graphic novel*.
  - b. Students may read the graphic novel, or read to someone at home or in a lower grade level.
4. Share the storyboard they created in a gallery walk.

**Assessment:** Students self-check their storyboard using the Storyboard Checklist in Appendix 1.2: *Adaptations Storyboard*.

## VI. Completing the Four Squares for *Kuleana*

Four squares is a vocabulary strategy that helps students understand word meanings and establish relationships with examples and nonexamples of the concept.

1. Provide students with Appendix 1.3: *Adaptations Four Square*.
  - a. Do a sample with the class. (See the sample in Appendix 1.3: *Adaptations Four Square*)
  - b. Students work on groups to complete their four squares. See the Hawaiian word list and the target science and science-related words.

- square vocabulary activity.*
2. *Student accurately and independently completes a four square vocabulary task independently, which includes the definition, example of the word, and nonexample of the word.*

**Length**  
30 minutes

**Materials**

1. *Appendix 1.3: Adaptations Four Square.*
2. *Paper for additional four squares.*
3. *Colored pens or pencils, if adding art to the four squares.*

- c. The teacher can decide whether the class will choose one word to generate depth of understanding, or several words from the list.
2. Students share their squares. Create a wall mosaic of student four squares.

**Assessment:** Students accurately complete the four square for targeted vocabulary words.

## Appendix 1.1: *Adaptations* Wall Chart

Questions	Before Viewing <i>The Menehune and the Birds</i>	After Viewing <i>The Menehune and the Birds</i>
1. Examples of <i>kuleana</i> in the rainforest among the people, organisms, and the menehune.		
2. Rules of the forest that were followed.		
3. Words and phrases that describe the forest where the menehune lived.		

### Reference

Scholastic Inc. (2011). My march top ten list: Nonfiction reading resources. Retrieved September 9, 2011, from [http://blogs.scholastic.com/top\\_teaching/2011/03/my-march-top-ten-list-nonfiction-reading-resources.html](http://blogs.scholastic.com/top_teaching/2011/03/my-march-top-ten-list-nonfiction-reading-resources.html)

## Appendix 1.2: Adaptations Storyboard

Chapter 3 of *The Menehune and the Birds* begins with the Menehune chief talking to the men, telling them to atone for their deeds by making the forest pono.

The story ends with aunty saying, “Many things happened that affected the forest, and many of the bird songs that our ancestors enjoyed are no longer heard today. Some birds have become scarce, many others did not survive.”

But, “It’s always a hopeful story when people are able to learn the error of their ways and make better choices next time.”

*What were “the many things that affected the forest?”* Using the information from the story, create up to six frames of what you think may have happened to explain why we no longer hear the bird songs that our ancestors enjoyed.

Note: Students may want to use larger sheets of drawing paper for their storyboard.

### Storyboard Checklist

Does your storyboard include:	Yes	No
1. An explanation of one’s <i>kuleana</i> for something?		
2. An explanation of why birds are becoming scarce?		
3. A character who learns through error?		
4. A lesson that will be passed on from one generation to the next? What is it?		
5. Other (teacher/students to add)?		

**Title** \_\_\_\_\_

<i>Scene</i>	<i>Scene</i>	<i>Scene</i>
<i>Caption/Dialogue</i>	<i>Caption/Dialogue</i>	<i>Caption/Dialogue</i>

<i>Scene</i>	<i>Scene</i>	<i>Scene</i>
<i>Caption/Dialogue</i>	<i>Caption/Dialogue</i>	<i>Caption/Dialogue</i>

Name: \_\_\_\_\_ Date: \_\_\_\_\_

## Appendix 1.3: Adaptations Four Squares

### Four Squares

#### What is Four Squares?

Four Squares is a simple version of a word map. It is used for any word with which students are having difficulty. It was developed by Eeds and Cockrum (1985), and because of its simplicity, it is sometime referred to as a “hip pocket” approach.

It is recommended that this activity be completed with the whole class, or in cooperative groups, capitalizing on the interactive discussions with others.

#### Purpose

1. To build a deeper understanding of word meanings or concepts.
2. To establish word relationships.

#### Materials

1. Blank copy of the four squares template.
2. Target words for *The Menhune and the Birds*.

#### Procedure

1. Each student folds a sheet of paper to create four sections.
2. Students write the target word or concept in the upper left corner of the section.
3. The teacher describes the word and provides a student-friendly definition that serves as a conversation starter. (Students do not write the definition.)
4. Have students provide examples of the word or concept. Make a list of these examples. Have students select and write several examples in the top right corner of the section of their paper.
5. Next, repeat the same procedure with nonexamples. Have students write the nonexamples of the word or concept in the bottom right corner of the section of the paper.
6. Ask students to compose a definition in their own words for the concept or word in the bottom left corner of the section of the paper.
7. Divide the words so students create four squares for all of the target words for *Adaptations in Hawai'i's Rainforest*, including the Hawaiian words such as *kuleana* and *pono*. The teacher and students may add other words related to the story.

#### Reference

Eeds, M., & Cockrum, W. (1985). Teaching word meanings by expanding schemata vs. dictionary work vs. reading in context. *Journal of Reading*, 28(6), 492–497.

### Four Squares

<u>Word</u>  <b><i>Abundant</i></b>	<u>Examples of the Word or Concept</u>  Birds in the Menehune rainforests  Plenty of rain  Lush forest  Source of energy
<u>Student's Definition of the Word</u>  <b><i>In great quantity; lots of</i></b>	<u>Nonexamples of the Word or Concept</u>  Scarce supply of feathers  Sparse growth of trees  Decreasing forest resources

### The Menehune and the Birds Word List

<b><i>Adaptation</i></b>	<b><i>Interdependence</i></b>	<b><i>Cycle of Matter/Flow of Energy</i></b>	<b>Hawaiian Words</b>
adapt	absorb	eliminate	ali'i
defend	abundant	predator	kolohe
definite	adequate	prey	kuleana
habitat	consumer	provide	pololei
survive	decomposer	release	pono
transform	identifiable	scarce	
evidence	microscopic	transfer	
	producer		

# Four Squares

Word	Examples of the Word or Concept
Definition of the Word	Nonexamples of the Word or Concept

Name: \_\_\_\_\_ Date: \_\_\_\_\_

# THE MENEHUNE AND THE BIRDS: ADAPTATIONS IN HAWAII'S RAINFOREST

## Lesson 2

### Table of Contents

#### Understanding Adaptation

*Acquire, Process, Understand, and Conceptualize Knowledge*

**Driving Question:** *What adaptive features helped the Hawaiian rainforest organisms to survive?*

Learning Engagements		Pages
I.	Locating information in <i>Adaptations in Hawaii's Rainforest</i> Appendix 2.1: <i>Adaptations</i> Text Feature Scavenger Hunt	20 25
II.	Understanding Hawaii's unique rainforest Appendix 2.2: <i>Adaptations</i> Hawaiian Rainforest Experts	21 31
III.	Developing concept of definition maps Appendix 2.3: <i>Adaptations</i> Concept of Definition Map	22 34
IV.	Demonstrating understanding of adaptation	23



## The Menehune and the Birds: Adaptations in Hawai'i's Rainforest

*Mālama ika 'āina (Respect the Land)*

*In those days, birds were abundant in the forests of Hawai'i. There were the 'īiwi, the 'ō'ō, the 'amakihi, the 'apapane, and the mamo. At that time, the feathers of these birds were used to make intricate kāhili, capes, and lei for the ali'i.*



### Lesson Notes

#### I. Locating information in Adaptations in Hawai'i's Rainforest

##### Concepts/Themes

Language follows conventions or rules that help ensure effective communication and are needed to comprehend and construct text (print, media, and electronic).

Common text features (e.g., typeface, headings, and illustrations) organize information in texts.

##### Length

45 minutes

##### Objective

Students contribute to the group scavenger hunt by locating a minimum of two text features and are able to articulate how the two features help them understand the text-set.

### Developing an Understanding of Adaptation

*Acquire, Process, Understand, and Conceptualize Knowledge*

**Driving Question:** *What adaptive features helped the Hawaiian rainforest organisms to survive?*

#### I. Locating information in Adaptations in Hawai'i's Rainforest

Information from the animated story and science text-sets provide the content for understanding adaptation in Hawai'i's rainforests. The animated story and science text-sets also present basic Hawaiian words and concepts to know. Examples include: *kuleana, pono, pali, and kia manu.*

1. Divide the class into groups according to the categories of text features listed in Appendix 2.1: *Adaptations* Introduction to Text Features Scavenger Hunt.
2. Conduct a Text Feature Scavenger Hunt.
  - a. If this is the first Text Feature Scavenger Hunt, follow the directions in Appendix 2.1: *Adaptations* Introduction to Text Features Scavenger Hunt.

### Materials

1. *Adaptations in Hawai'i's Rainforest* text-set.
2. Appendix 2.1: *Adaptations Text Feature Scavenger Hunt*.

## II. Understanding Hawai'i's Unique Rainforest Through Rainforest Experts

### Concept/Theme

The adaptations of an organism allow it to survive in an environment. Different organisms need specific environmental conditions to survive.

### Objective

Students are able to explain and provide details to support their explanations for sets of questions posed to them as rainforest experts.

### Length

Two 45-minute sessions

### Materials

1. Appendix 2.2: *Adaptations Rainforest Experts*.
2. *Adaptations in Hawai'i's Rainforest* text-set.
3. Wall chart .
4. Marking pens or colored chalk.
5. Journals.

- b. If students have been introduced to text features before, select a text category that was challenging for the students in the previous lesson. Follow the directions in Appendix 2.1: *Adaptations Text Features Scavenger Hunt*.
3. Each group shares its examples. Other students in the class add to the discussion question: *How does the text feature help with understanding the information in the text-set?*
4. Optional: Students enter what they consider the most helpful text feature for them in their journals.

**Assessment:** Each student contributes at least two examples to their group collection of text features, and is able to explain how these help with understanding the information in the text-set.

## II. Understanding Hawai'i's Unique Rainforest Through Rainforest Experts

Students work in groups. Each group will assign roles to its members. The roles include *geographers, Hawaiian cultural advisors, botanists, historians, and animal scientists*. The task of each expert is to contribute information to the group about his/her area of expertise in the Hawaiian rainforest. See task directions for each expert. This is an application of the idea of *kuleana* explored in Lesson 1. (See Appendix 2.2: *Adaptations Rainforest Expert*.)

1. Divide the class into groups of three to five.
2. Each group determines the roles of their experts (students may need to take multiple roles), which must include:
  - a. Geographer
  - b. Hawaiian Cultural Advisor
  - c. Historian
  - d. Botanist
  - e. Animal Scientist

Another way of grouping the students is by the scientists. For example, create a group of geographers, Hawaiian cultural advisors, historians, botanists, and animal scientists.

3. See Appendix 2.2: *Adaptations Rainforest Experts* for role descriptions, task details, and resources.
4. As a group, develop a rubric that applies the concept of *kuleana* to the group work to be accomplished and add it to the content rubric.

5. Groups complete the task by following the procedures outlined in the Appendix 2.2: *Adaptations* Rainforest Experts.
6. Groups share their information (optional depending on time).
  - a. The groups could extend their information in a large class display including the levels of the rainforest.
  - b. The groups could have a blank chart paper on the wall. As each group shares the information, add the information in pictorial format on the wall chart.
  - c. Students can ask the rainforest scientists questions.
7. Summarize the information provided by each group.

**Assessment:** Students enter in their journals a minimum of two summarizing sentences, and for each statement, write two explanations with supportive evidence.

### III. Developing Concept of Definition Maps

#### **Concept/Theme**

*Visual representations of the relationships of words build a richer and deeper understanding of word meanings or concepts.*

#### **Objective**

*Students will accurately complete a concept of definition map of the target words which includes:*

- *The concept/word.*
- *What the concept/word is like.*
- *An example of the concept/word.*
- *A nonexample of the concept/word.*

#### **Length**

*45 minutes*

#### **Materials**

1. *Adaptations in Hawaiian Rainforest text-set.*
2. *Appendix 2.3: Adaptations Concept of Definition Map.*

### III. Developing Concept of Definition Maps for Adaptation Vocabulary Words

The concept of definition map provides students with a tool to develop a richer and deeper understanding of a vocabulary word. The maps can be used throughout the lessons of *The Menehune and the Birds*.

1. Follow the procedures for explicit instruction of vocabulary words. (See Appendix 2.3: *Adaptations* Concept of Definition Map)
2. Conduct the explicit instruction introducing the target words.
3. Have students complete concept of definition maps in small groups.
4. Students should be able to complete at least two concept of definition maps independently.
5. Share the different examples provided for the same word to extend the richness and depth of the word.
6. At the end of the lesson, students could engage in a variety of word challenges.
  - a. Figuring out the word by given examples and nonexamples
  - b. Figuring out the word by descriptions of its features or properties

#### IV. Demonstrating Understanding of Adaptation

##### **Concept/Theme**

*The adaptations of an organism allow it to survive in an environment.*

##### **Objective**

*Students are able to express in writing why organisms, such as the honeycreepers, were able to survive in Hawai'i's Rainforests. Cite at least two examples of how they were able to survive.*

##### **Materials**

1. Digital camera.
2. Journal.
3. Colored pencils or crayons.
4. *Adaptations in Hawai'i's Rainforest* text-set.
5. 5x8 Index Cards.

**Assessment:** Student accurately completes a minimum of two concept of definition maps independently.

#### IV. Demonstrating Understanding of Adaptation (Focus on Special Adaptations)

During this lesson, students will focus on an adaptation that has occurred over millions of years (e.g., bird beaks).

1. Students recall how plants and animals made their way to Hawai'i before humans arrived in Hawai'i. Elicit many ideas from the students. Ideas may include:
  - a. Hawai'i is 2,500 miles away from a land mass.
  - b. Organisms reached the islands by way of wind, waves, and waste.
  - c. Organisms had an opportunity to thrive in a variety of environments.
  - d. Few predators were capable of reaching the islands.
  - e. One species of finch reached the islands.
2. Over a period of 2 to 3 days, have students observe birds in their environment. (Note: This section can precede or follow the lesson on adaptation.)
  - a. Snap photos.
  - b. In their journals, students sketch the bird focusing on the beaks or bills of the birds. Observe:
    - i. Shape, size, color.
    - ii. What the birds eat.
    - iii. Where the birds nest, live.
    - iv. Whether they are native, endemic, or indigenous.
3. Debrief findings with the class.

#### Rainforest Adaptations—Birds and Bills

1. Look at the bird bills on Page 11 of the text-set, *Adaptations in the Hawaiian Rainforest*. These honeycreepers evolved from one finch species that reached Hawai'i 3 to 4 million years ago (See Page 10).
2. Select distinctive bills and speculate on:
  - a. Description—color, size.
  - b. What they ate to survive.
  - c. How they used their bills to survive.
  - d. Which part of the forest they may have inhabited, and why.
3. In pairs, students create one to two bird cards with basic

information of birds. (See Page 21 of *Adaptations in the Hawaiian Rainforest*).

- a. Name (English and Hawaiian)
  - b. Size
  - c. Forest Habitat
  - d. Diet
  - e. Interesting facts
  - f. Native or non-native
  - g. Endangered or not
4. If a classroom display of the rainforest was created in Rainforest Experts, students place the cards in the bird's habitat.
  5. Provide information about *adaptive radiation* and *adaptive shifts* on Page 14 of *Adaptations in Hawai'i's Rainforest*.
  6. Extension tasks using the bird cards include:
    - a. Grouping and regrouping by characteristics of the bird.
    - b. Matching with habitats.
    - c. Implications for survival with current day predators.
  7. Have students record in journals responses to the questions:

Describe **why** organisms were able to survive in the Hawaiian rainforest environment.  
Describe **how** they were able to survive.

**Assessment:** Review journal entries for accurate responses to **why** organisms were able to survive in the rainforest environment and **how** they were able to survive.

## Appendix 2.1: Adaptations Text Features

### Text Features

Fisher, Frey, and Lapp (2009) define text features as design elements used in text to provide a structure to the reading. They go on to say, “These features include titles, headings, charts, and photographs” (Fisher, Frey, & Lapp, 2009, pp. 100–101).

According to Fountas and Pinnell (2006), there are five broad categories of text features for information texts and they are:

1. Text divisions
2. Organizational tools and sources of information
3. Graphics
4. Print
5. Layout

Each of the above text features are explained in more detail below.

Text Feature Category	Text Feature	Purpose
<b>Text Divisions</b>	<ul style="list-style-type: none"> <li>• Chapters</li> <li>• Sections</li> <li>• Introductions</li> <li>• Summaries</li> <li>• Author information</li> </ul>	<p>The text divisions are how the text is organized and presented. Teach students to use the text divisions to quickly find information. The <b>sections</b> in some books define the general information to be found in each section.</p> <ul style="list-style-type: none"> <li>• The <b>chapter titles</b> and <b>sections</b> inform the students about the content of the chapter.</li> <li>• The <b>introduction</b> provides an overview of the book.</li> <li>• The <b>summary</b> provides the gist of the section.</li> <li>• They can check the information about the <b>author</b> to determine the reliability of the information.</li> </ul>
<b>Organizational Tools and Sources of Information</b>	<ul style="list-style-type: none"> <li>• Titles</li> <li>• Table of contents</li> <li>• Index</li> <li>• Headings and subheadings</li> <li>• Glossary</li> <li>• Pronunciation guide</li> <li>• References</li> </ul>	<p>Organizational tools help students to understand the information.</p> <ul style="list-style-type: none"> <li>• The <b>table of contents</b> and <b>index</b> help the reader to quickly find information.</li> <li>• The <b>titles, headings, and subheadings</b> help the reader to predict what will be read.</li> <li>• The <b>glossary</b> provides the student with a basic understanding of a word or concept.</li> <li>• The <b>pronunciation guide</b> helps the student to pronounce unknown words.</li> <li>• The <b>references</b> can be used to verify the information in the text or to find additional information.</li> </ul>
<b>Graphics</b>	<ul style="list-style-type: none"> <li>• Diagrams</li> <li>• Charts and tables</li> <li>• Graphs</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Diagrams, charts, tables, and graphs</b> often show information that is easier to understand because of its symbolic representation, or it enhances what was written in the text.</li> </ul>

Text Feature Category	Text Feature	Purpose
	<ul style="list-style-type: none"> <li>• Maps</li> <li>• Labels</li> <li>• Photographs</li> <li>• Illustrations</li> <li>• Paintings</li> <li>• Cutaway</li> <li>• Timelines</li> <li>• Captions</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Maps</b> help the reader understand where things are in the world.</li> <li>• <b>Labels</b> help the reader identify a picture, or a photograph, and its parts.</li> <li>• <b>Photographs, illustrations, and paintings</b> help the reader to understand what something looks like.</li> <li>• A <b>cutaway</b> helps the reader to understand something by looking at it from the inside.</li> <li>• A <b>timeline</b> helps the reader understand the order in which events happen.</li> <li>• <b>Captions</b> are the word or words found underneath or beside a visual. The purpose of the caption is to provide the reader with the gist of what the visual is about.</li> </ul>
<b>Print</b>	<ul style="list-style-type: none"> <li>• Size or style of print, (e.g., regular, boldface, italic, underlined)</li> <li>• Changes in print color or highlighting</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Bold, underlined, and italicized</b> print is a signal that the words are important and the reader needs to pay attention. Sometimes the author may increase the size of the print and/or color to alert the reader that something is very important.</li> </ul>
<b>Layout</b>	<ul style="list-style-type: none"> <li>• Format of the text</li> <li>• Columns</li> <li>• White space</li> <li>• Shading</li> <li>• Insets</li> <li>• Bullets and numbers</li> </ul>	<p>The way the text is <b>organized</b> can aid or detract from the students' ability to understand what is read.</p> <ul style="list-style-type: none"> <li>• Some texts may require students to read the information in <b>columns</b> while others use the full page.</li> <li>• Sometimes adding <b>bullets</b> and/or <b>numbers</b> helps the reader to be able to break down the information and more easily understand it.</li> </ul>

Written by Susan Hanson, Reading Specialist at PREL (Pacific Resources for Education and Learning)

## References

Fisher, D., Frey, N., & Lapp, D. (2009). *In a reading state of mind: Brain research, teacher modeling, and comprehension instruction*. Newark, DE: International Reading Association.

Florida Department of Education. (2007). Text features. Retrieved June 14, 2010, from [http://forpd.ucf.edu/strategies/strattext\\_features.html](http://forpd.ucf.edu/strategies/strattext_features.html)

Fountas, I. C., & Pinnell, G. S. (2006). *Teaching for comprehending and fluency: Thinking, talking, and writing about reading, K-8*. Portsmouth, NH: Heinemann.

Pacific Resources for Education and Learning. (2007). *Pacific communities with high-performance in literacy development teachers' manual*. Honolulu, HI: Author.

## Appendix 2.1: Adaptations Text Features Scavenger Hunt

### Text Features Focus on Graphics

#### What are Text Features?

Fisher, Frey, and Lapp (2009) define text features as design elements used in a text to provide a structure to the reading. They go on to say, “These features include titles, headings, charts, and photographs” (Fisher, Frey, and Lapp, 2009, pp. 100–101).

According to Fountas and Pinnell (2006), there are five broad categories of text features for information texts and they are:

1. Text divisions
2. Organizational tools and sources of information
3. Graphics
4. Print
5. Layout

#### Focus on Graphics

**Diagrams, charts, tables, and graphs** often show information that is easier to understand because of its symbolic representation, or it enhances what was written in the text. **Maps** help the reader understand where things are in the world. **Labels** help the reader identify a picture or a photograph and its parts. **Photographs, illustrations, and paintings** help the reader to understand what something looks like. A **cutaway** helps the reader to understand something by looking at it from the inside. A **timeline** helps the reader understand the order in which events happen. **Captions** are the word or words found underneath or beside a visual. The purpose of the caption is to provide the reader with the gist of what the visual is about.

#### Purpose

*Students describe how common text features (e.g., typeface, headings, and illustrations) organize information in texts.*

#### Materials

1. *The Menehune and the Birds animated story.*
2. *The Menehune and the Birds graphic novel.*
3. *Adaptation, Interdependence, and Cycle of Matter/Flow of Energy in Hawai'i's Rainforest text-sets.*
4. *Appendix 2.1: Adaptations Text Features Scavenger Hunt.*

#### Procedure

1. Conduct a quick review of text features presented in *Why Māui Snared the Sun* and *Pele Searches for a Home*.
2. Connect with students' prior knowledge about text features in a class discussion.
3. Jigsaw the task of locating and retrieving information on text features that help reading informational text.
4. Model one example with the students.
5. Optional: Class may be given individual text features or locate features by categories such as:
  - a. Diagrams, charts, tables, graphs, and timelines
  - b. Maps, labels, and captions
  - c. Photographs
  - d. Illustrations, artwork, and sketches

Or, they may hunt for text features by pages:

- a. Pages iii, 21–31, 33–34 (Note: These pages are consistent for all the books so review these as a class with the first book that is used.)
- b. 1–4
- c. 5–8
- d. 9–10, 19–20
- e. 11–14
- f. 15–18

6. Provide students with the chart, Text Feature Scavenger Hunt.

- a. Students search through the text-sets in groups, looking for as many examples as they can find.
  - i. They record the purpose and examples located.
  - ii. Emphasize the purpose, as well as the features, that are interesting to the students.
- b. Turn at least two of the features into a scavenger hunt question or riddle; (e.g., I was able to get to Hawai'i on my own. That is why they call me a \_\_\_\_\_).
- c. Students share their text features by doing a scavenger hunt game.
  - i. Read the questions or riddle created. The team that scores the most points, wins.
  - ii. Summarize the purpose for text features.

## TEXT FEATURE SCAVENGER HUNT

Title of Text-Set \_\_\_\_\_

*Your job is to identify the text feature, find examples of as many different features as you can.*

Text Feature	Purpose	Found in	Page
--------------	---------	----------	------

What kind of information does it provide?

\_\_\_\_\_

Be ready to share at least two examples.

\_\_\_\_\_

List what interested your group about the feature.

\_\_\_\_\_

\_\_\_\_\_

\*\*\*\*\*

Title of Text-Set \_\_\_\_\_

*Your job is to identify the text feature, find examples of as many different features as you can.*

Text Feature	Purpose	Found in	Page
--------------	---------	----------	------

What kind of information does it provide?

\_\_\_\_\_

Be ready to share at least two examples.

\_\_\_\_\_

List what interested your group about the feature.

\_\_\_\_\_

\_\_\_\_\_

## TEXT FEATURE SCAVENGER HUNT

**Title of Text-Set** \_\_\_\_\_

*Your job is to identify the text feature, find examples of as many different features as you can.*

<b>Text Feature</b>	<b>Purpose</b>	<b>Found in</b>	<b>Page</b>
---------------------	----------------	-----------------	-------------

**What kind of information does it provide?**

**Be ready to share at least two examples.**

**List what interested your group about the feature.**

\*\*\*\*\*

**Title of Text-Set** \_\_\_\_\_

*Your job is to identify the text feature, find examples of as many different features as you can.*

<b>Text Feature</b>	<b>Purpose</b>	<b>Found in</b>	<b>Page</b>
---------------------	----------------	-----------------	-------------

**What kind of information does it provide?**

**Be ready to share at least two examples.**

**List what interested your group about the feature.**

*Name of your group* \_\_\_\_\_ *Date* \_\_\_\_\_

## Appendix 2.2: Adaptations Hawaiian Rainforest Experts

### Hawaiian Rainforest Experts

#### Task

You are a team of experts selected to provide information about the Hawaiian Rainforest.

1. Each expert will be assigned an important mission to find out and provide accurate information about one aspect of the Hawaiian Rainforest.
  - a. Your information is important to the members of your group.
  - b. Survival of the organisms in the rainforest will depend on the information you provide.
2. As a team, you will decide how to combine your information into a group sharing.
3. See the sharing checklist as a guide for what you should include in your sharing.

#### Geographer

Your task is to find out about Hawai'i's special location, its climate, and about the rainforest. You should have information to answer questions such as:

1. *Why is the Hawaiian Islands' location different from other states?*
2. *What are the surface features of the Hawaiian Islands?*
3. *What is the climate of the Hawaiian Islands?*
4. *Why do we have rainforests in Hawai'i? Where are they found on the islands?*

#### Resource

*E Ho'omau! Adaptations in Hawai'i's Rainforest* Pages 1–2

#### Hawaiian Cultural Advisor

You are an expert on the early Hawaiian rainforest. Your task is to find out about what the rainforest was like and how the early Hawaiians depended on the Hawaiian rainforest. You should gather information to answer questions such as:

1. *What is the Wainiha Preserve well known for?*
2. *How did the early Hawaiians divide their land, in addition to the Ahupua'a?*
  - a. *How did they use each part of the rainforest?*

3. *What is the wao?*
4. *Who were allowed to go to the different parts of the forest? What were their rules?*

### **Resource**

*E Ho'omau! Adaptations in Hawai'i's Rainforest* Pages 3–4

## **Historian**

You are a special historian who has studied the Menehune in the Hawaiian Islands. Your task is to share the information you find out about the Menehune that lived in the Wainiha Valley. You should gather information to answer questions such as:

1. *What is a Menehune?*
2. *Where did they come from? Where have they gone?*
3. *What are they known for?*
4. *What are some interesting things you know about them?*
5. *Are there still Menehune in Hawai'i?*
6. *Is there evidence that they existed?*

### **Resource**

*E Ho'omau! Adaptations in Hawai'i's Rainforest* Pages 9–10

## **Botanist**

*What is a botanist?* As a scientist who studies plants and animals, your task is to give us a description of the rainforest. You should gather information to answer questions such as:

1. *How did these forest plants get to Hawai'i?*
2. *What are the layers of the forest?*
3. *What grows in the different layers?*
4. *How do plants in each of the layers survive?*

### **Resource**

*E Ho'omau! Adaptations in Hawai'i's Rainforest* Pages 5–6

## **Animal Scientist**

You are an expert on what organisms made their way to Hawai'i before man even arrived here. Your information is important to the survival of the organisms. You should gather information to answer questions such as:

1. *What were the first inhabitants?*
2. *Where did the first inhabitants come from?*
3. *How did Hawai'i's distance from other land masses make a difference in what reached the islands?*
4. *How can we remember which animals are native, endemic, and indigenous?*

## Resources

*E Ho'omau! Adaptations in Hawai'i's Rainforest* Pages 7–8

1. *E Ho'omau! Adaptations in Hawai'i's Rainforest*
2. Hoike Rainforest. (2008). [[www.hear.org/hoike/rainforest.htm](http://www.hear.org/hoike/rainforest.htm)]. Provides basic information about Hawaiian rainforests.
3. Rainforest Alliance. (2011). Kids' Corner. [[www.rainforest-alliance.org/kids/activities](http://www.rainforest-alliance.org/kids/activities)]. Provides information and activities about global rainforests.
4. HEAR. (2001). Hawaiian Ecosystem at Risk Project. [[www.hear.org/](http://www.hear.org/)]. Provides information about Hawai'i's Ecosystem and links to other Hawai'i resources.
5. Department of Land and Natural Resources. (n.d.). Hawai'i Forests & Wildlife. [[www.state.hi.us/dlnr/dofaw/kids/teach/index.htm](http://www.state.hi.us/dlnr/dofaw/kids/teach/index.htm)].

## Hawaiian Rainforest Experts' Rubric

Sharing	Advanced	Proficient	Basic
<b>Content</b>	Explains and provides details to support explanations.  Provides and supports a judgment.	Interprets information and provides details to support interpretation.  Summarizes and draws conclusions.	Interprets the information.  Provides details to support interpretation.

## Appendix 2.3: Adaptations Concept of Definition Map

### Concept of Definition Map

A concept of definition map is a graphic organizer that helps students develop a richer concept of a word that goes beyond the way it is defined in a dictionary (Schwartz and Raphael, 1985). A new word's attributes (category, properties) are explored to broaden and deepen students' understanding of the word.

#### Purpose

1. To build a deeper understanding of word meanings or concepts.
2. To establish word relationships among words.

#### Materials

1. Blank copy of Concept of Definition Map.
2. Pictures of organisms and nonorganisms.
3. Dictionary.
4. Science text-set, *Adaptations in Hawai'i's Rainforest*.

#### Reference

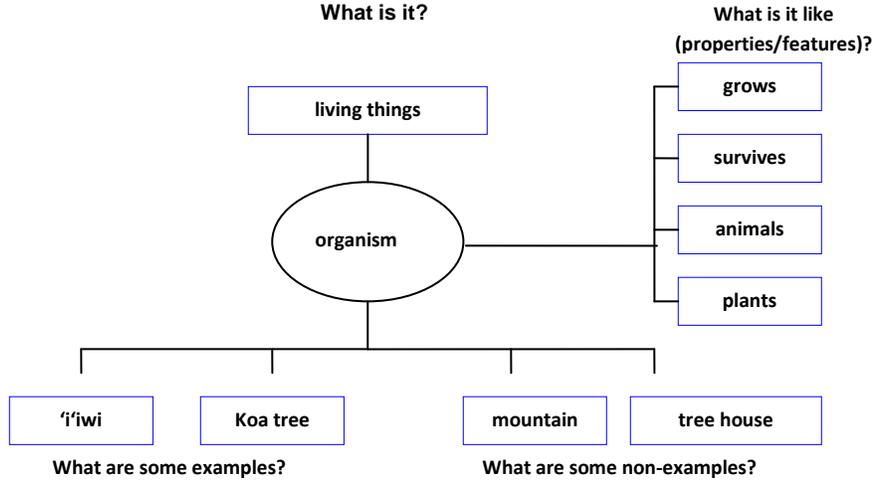
#### Procedure

1. Begin by modeling the process with the entire class. Discussions are a key component of the process, since many science words are entirely new concepts. Discussions allow students to actively process word meanings and to develop a deeper understanding of complex concepts.
2. Inform students that everyone will work together to come up with a richer definition for a target concept they are learning about in class (e.g., *organism*). Write the word in the center circle.
3. Guide students to have them determine the broad category that the target word belongs to (e.g., *living things*).
4. Complete the map by asking students what are some words that describe the word (e.g., *animals, plants, grows, survives*) based on the context of what they are reading or have read. Have other resources available such as science text-sets, glossaries, or dictionaries.
5. Invite students to provide examples and nonexamples of the word.
6. Demonstrate how to write a definition for the word using information on the word map.
7. Form small cooperative groups to provide guided practice with another word.
8. Provide independent work with other words.

Note: This word map works best with nouns.

Schwartz, R., & Raphael, T. (1985). Concept of definition: A key to improving students' vocabulary. *The Reading Teacher*, 39, 198–205.

## Concept of Definition Map for *Organism*



## Sample Words from *The Menehune and the Birds*

### Book 1 – *Adaptation*

adaptation  
defend  
evidence  
habitat  
nutrient  
organism  
survive  
structure

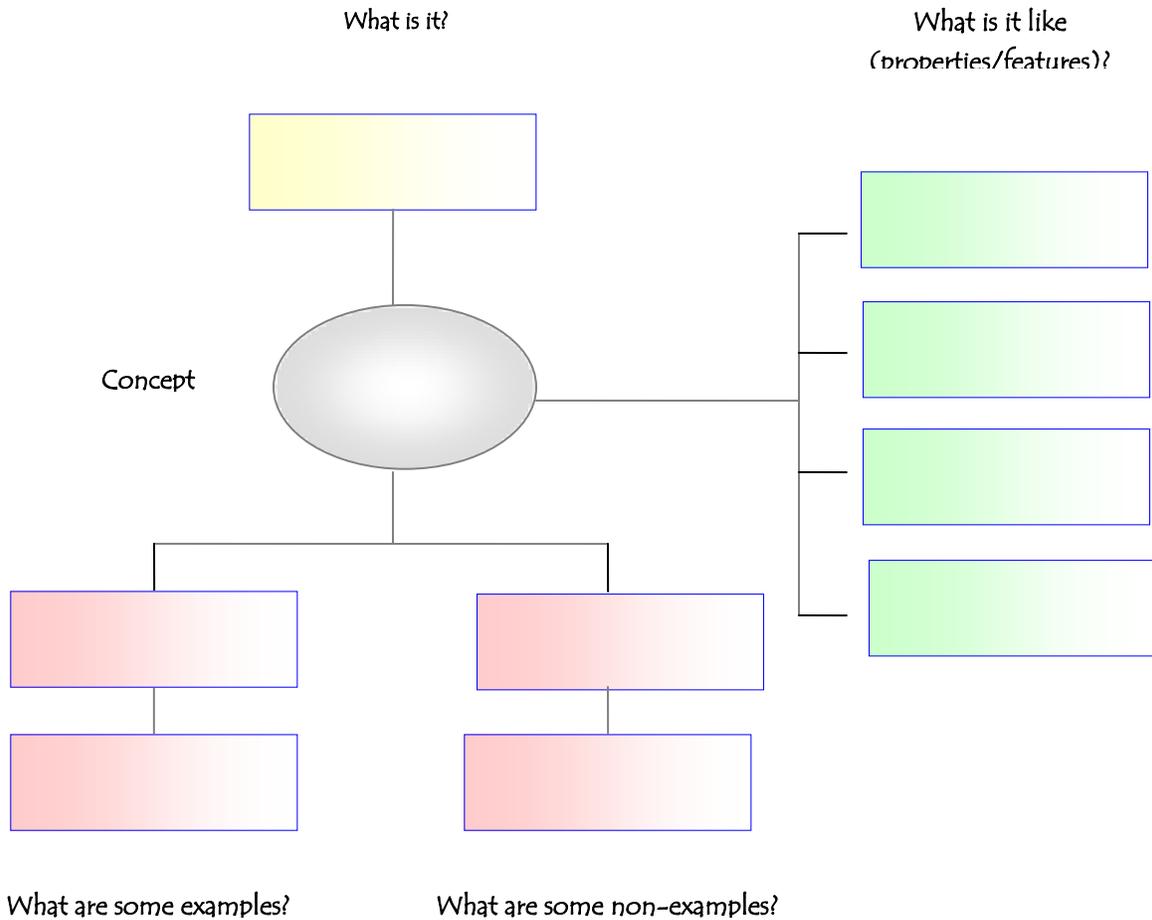
### Book 2 – *Interdependence*

consumer  
decay  
decomposer  
microscopic  
producer  
rainforest  
source

### Book 3 – *Cycle of Matter, Flow of Energy*

cycle  
food chain  
predator  
prey  
sequence

# Concept of Definition Map



Name: \_\_\_\_\_ Date: \_\_\_\_\_

# THE MENEHUNE AND THE BIRDS: ADAPTATIONS IN HAWAII'S RAINFOREST

## Lesson 3

### Table of Contents

#### Extending the Understanding of Adaptation *Practice, Clarify, Internalize, and Demonstrate*

**Driving Question:** *How have other adaptive features helped organisms survive in Hawai'i's rainforest?*

Learning Engagements	Pages
I. Extending the understanding with unique adaptations	38
II. Exploring the nearest rainforest	39
III. Comparing and contrasting birds in the Hawaiian rainforest (See Appendix 3.1: <i>Adaptations</i> Compare and Contrast)	40 42



# The Menehune and the Birds: Adaptations in Hawai'i's Rainforest

## Lesson 3

*Mālama ika 'āina (Respect the Land)*

*The 'elepaio has [marked] the canoe [log], meaning there is an indication of definite failure (Pukui 2777, p. 306).*



Help us do  
forest  
work

### Lesson Notes

#### I. Extending the Understanding of Adaptations

##### **Concept/Theme**

*The adaptations of an organism allow it to survive in an environment.*

##### **Objectives**

1. *Students state what they consider the most unusual feature or characteristic that helped an organism survive.*
2. *Explain by writing why the unusual feature developed, using a cause and effect graphic organizer.*

##### **Length**

*Two 45-minute sessions*

##### **Materials/Resources**

1. *Adaptations in Hawai'i's Rainforest text-set.*
2. *'Ōlelo Noeau.*

### Extending the Understanding of Adaptation

*Practice, Clarify, Internalize, and Demonstrate*

**Driving Question:** *How have other adaptive features helped organisms survive in Hawai'i's rainforest?*

#### I. Extending the Understanding of Adaptations in Hawai'i's Rainforest

The 'Ōlelo Noeau expresses special relationships with humans and the organisms of the rainforest.

1. *What is the relationship of humans and the 'elepaio in the rainforest? How does this special relationship relate to the idea of "adaptation?"*
2. *Can students think of other relationships with organisms in their environment? Other ideas may include the relationship between the land vegetation and sea organisms; the flight of birds before a storm.*
3. *Students ask their parents, kūpuna, or other students for other examples. The 'Ōlelo Noeau may include other relationships. Have students search for these sayings.*
4. *How does the interpretation of the actions of organisms in nature relate to human beings? Examples may include:*
  - *Man's keen observation of the habits and behaviors of the organisms provides him with clues about the*

resources he needs.

- Some of the organisms were regarded as family ‘aumākua.
  - Hearing stories of the organisms and their relationship with their environment.
  - Scientists conducting experiments with organisms found.
5. Have students take a moment to reflect in their journals. Record one relationship they have heard of, read about, or found out from the kūpuna, in which man has a special relationship with organisms in their environment.
  6. In groups of three, students select one of the organisms on Pages 13–18 in *Adaptations* to extend their understanding of adaptations that are unique.
    - a. Students read for the unique or amazing adaptive features of the organism.
    - b. Students share the unique and adaptive features or characteristics of the organism with the class.
    - c. As a class, determine the three most unusual features or characteristics that helped the organisms survive.
  7. Conduct a class discussion on why these unusual adaptive features developed:
    - a. Predators may not have been around as organisms inhabited the rainforest; therefore, the organism developed unique features to take advantage of new sources of food.
    - b. Organisms developed interdependent relationships with other organisms and plants.
  8. Students add to their journal what they consider the most unusual feature or characteristic that helped an organism survive. Explain by writing why the unusual feature developed, using a cause and effect graphic organizer.

**Assessment:** Review the cause and effect graphic organizer and written cause and effect statement for accuracy.

## II. Exploring the Nearest Rainforest

### **Concept/Theme**

*The adaptations of an organism allow it to survive in an environment.*

## II. Exploring the Nearest Rainforest

If students have access to a rainforest, have them explore the rainforest.

1. Either by drawing or using a digital camera, record:
  - a. The different layers of the rainforest.
  - b. Organisms in the different layers.

**Objective**

Students express their thoughts about the rainforest near them in a sensory poem.

**Length**

45 minutes in class  
45 minutes onsite

**Materials**

1. Digital camera.
2. Drawing utensils and paper.

### III. Comparing and Contrasting Birds

**Objective**

Students independently apply the use of a compare and contrast graphic organizer to show similarities and differences between birds in the Hawaiian rainforest.

**Length**

45 minutes

**Materials**

1. *Adaptations in Hawai'i's Rainforest* text-set.
2. Appendix 3.1: *Adaptations Compare and Contrast*.

- c. Interview docents or rainforest scientists on original and current rainforests:  
*Are they the same? What happened?*  
*Are the organisms the same? How are they the same, different?*  
*Are there new organisms? How have new organisms affected the native organisms?*

2. Discuss how the rainforests can be brought to those who are not able to visit the remote sites.
3. See Pages 19–20 in *Adaptations in Hawai'i's Rainforest* on how one person is bringing the rainforest birds to the people.
  - a. Discuss why this is important.

**Assessment:** Review student sensory poems for descriptive words of the rainforest, including the target words in *The Menehune and the Birds* Word Bank.

### III. Comparing and Contrasting Birds in the Hawaiian Rainforest.

Compare and contrast is a text structure that describes similarities and differences between two or more things, places, or events. Similarities and differences are easily seen when placed in a graphic organizer.

The following task is assigned if students have been explicitly taught the compare and contrast text structure.

1. Provide opportunities for students to translate their reading information using a graphic organizer.
2. Using their information on the birds, have students create their own graphic organizers to compare two to three birds from the Hawaiian rainforest.
3. Using the list of signal words, write sentences, and then paragraphs.
4. Students' paragraphs can be used as reading material for others to complete a compare and contrast graphic organizer. Once given the graphic organizer, other students can write paragraphs.
  - a. Compare the original graphic organizers and paragraphs with ones that other students have written.

- 
5. Summarize similarities and differences among the organisms, places, or events that students have written about.

**Assessment:** Review the accuracy of the student designed compare and contrast graphic organizer and related compare and contrast written statements.

## Appendix 3.1: *Adaptations* Compare and Contrast Introduction

### Compare/Contrast *Explicit Instruction*

#### What is a Text Structure?

Text structures are the way authors organize the information in text. The most common informational text structures include the following: compare/contrast, problem/solution, cause/effect, sequence, and descriptive. Most informational texts contain a variety of integrated types of text structure.

#### Compare/Contrast

One of the text structures that authors use to organize text is called compare/contrast. “Research has suggested that, of the most common expository text structures, the compare/contrast structure may be one of the more difficult for students to navigate” (e.g., Englert & Hiebert, 1984; Raphael, Elglert, & Kirschner, 1986; as cited in Dreher, p. 134). It has also been stated that becoming familiar with the text structure of compare/contrast is particularly helpful to the English Language Learners because it helps them to compare their own background knowledge with the new information. See Table 1 found below for additional information about the text structure of compare/contrast.

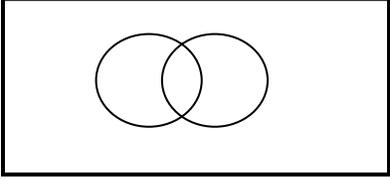
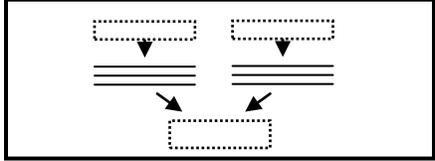
#### Signal Words

The way a reader can understand the text structure or the organization pattern of a text is through the use of signal words. Signal words are specific words that are clues or sign posts to the structure of the text. Each type of informational text has signal words that are unique to that structure. Signal words are clues to the reader that the author has organized the text in a specific way. In higher level texts, the signal words are often inferred rather than explicitly stated. See Table 1 for signal words that are commonly used with the text structure of compare/contrast and cause/effect.

#### Graphic Organizer

A graphic organizer is “A visual representation of information that shows the relationship between ideas or their organization” (Fountas & Pinnell, 2006, p. 490). Graphic organizers can be used to outline the text structure or pattern. They keep students actively engaged in the reading and they help students see the structure and remember the important points. Graphic organizers keep students actively involved and help them to organize information, see how major ideas are related, and remember key ideas that they read. See Table 2 for examples of graphic organizers for the compare/contrast and the cause/effect text structure.

**Table 1: Text Structure of Compare/Contrast**  
**Text Structures and Signal Words**

Text Structure	Description of Structure	Signal Words:	Sample Graphic Organizers																
<p><b>Compare/Contrast</b></p>	<p>Texts that follow this structure describe similarities and differences between two or more things, places, or events.</p> <p><b>Example:</b> Haleakalā is a dormant volcano found in Hawai'i, while Mount Rainier is a dormant volcano found in the state of Washington.</p> <p>Haleakalā is 10,023 feet tall, whereas Mount Rainier is 14,410 feet tall.</p>	<p>Different from, same as, alike, like, unlike, similar to, as well as, yet, not only, but also, either . . . or; most however, on the other hand, opposite, opposed to, while, both, by contrast, compared with, different from, however, in common, instead of, on the other hand, otherwise, still, unlike, whereas, yet.</p>	<p><b>Venn Diagram</b></p>  <p><b>Compare/Contrast Matrix</b></p> <table border="1" data-bbox="992 638 1430 863"> <thead> <tr> <th>Attribute</th> <th>Item</th> <th>Item</th> <th>Item</th> </tr> </thead> <tbody> <tr> <td>Attribute 1</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Attribute 2</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Attribute 3</td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <p><b>Compare/Contrast</b></p> 	Attribute	Item	Item	Item	Attribute 1				Attribute 2				Attribute 3			
			Attribute	Item	Item	Item													
			Attribute 1																
Attribute 2																			
Attribute 3																			

Written by Susan Hanson, Reading Specialist at PREL (Pacific Resources for Education and Learning)

**References**

Dreher, M. J., & Gray, J. L. (October 2009). Compare, contrast, and comprehend: Using compare-contrast text structures with ELLs in K–3 classrooms. *The Reading Teacher*, 63(2), 132–141.

Fisher, D., Frey, N., & Lapp, D. (2009). *In a reading state of mind: Brain research, teacher modeling, and comprehension instruction*. Newark, DE: International Reading Association.

Fountas, I. C., & Pinnell, G. S. (2006). *Teaching for comprehension and fluency: Thinking, talking, and writing about reading, K–8*. Portsmouth, NH: Heinemann.

Williams, J. P., Nubla-Kung, A. M., Pollini, S., & Stafford, K. B. (March/April 2007). Teaching cause-effect text structure through social studies content to at-risk second graders. *Journal of Learning Disabilities*, 40(2), 111–120.

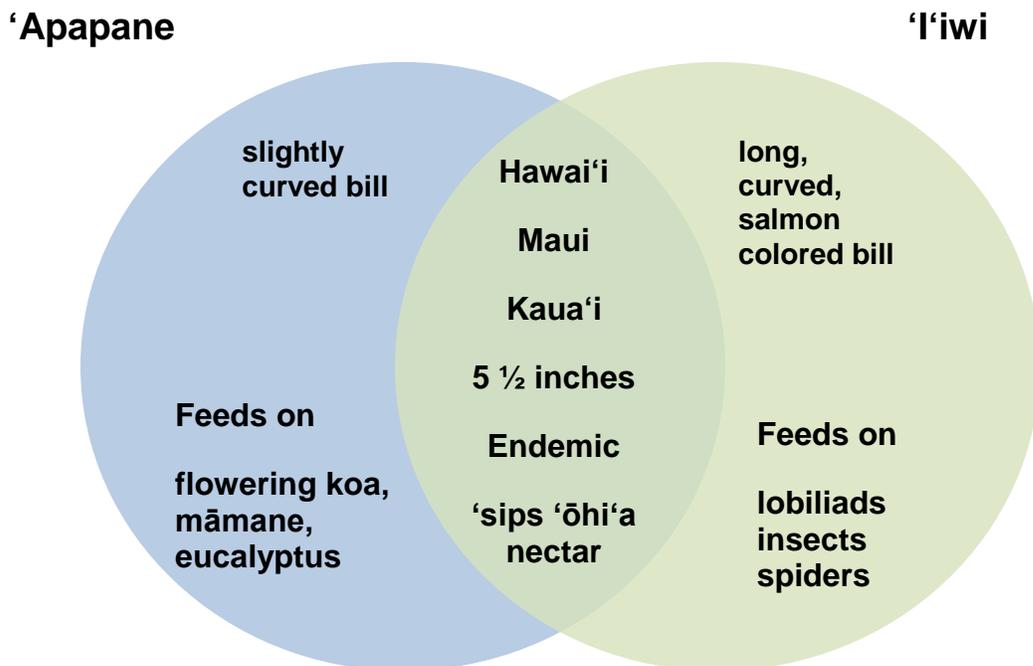
Appendix 3.1: *Adaptations* Signal Words

## Compare and Contrast Signal Words

<b>Compare (Similarities)</b>	<b>Contrast (Differences)</b>
<p><b>alike</b> <b>as well as</b> <b>both</b> <b>but also</b> <b>compared to</b> <b>in common</b> <b>just like</b> <b>like</b> <b>not only</b> <b>same</b> <b>similar to</b></p>	<p><b>although</b> <b>by contrast</b> <b>different from</b> <b>however</b> <b>in contrast to</b> <b>instead of</b> <b>most however</b> <b>on the other hand</b> <b>opposite</b> <b>opposed to</b> <b>unlike</b> <b>while</b> <b>yet</b></p>

**Example:** Comparing and contrasting island location, size, food source, and description of two birds:

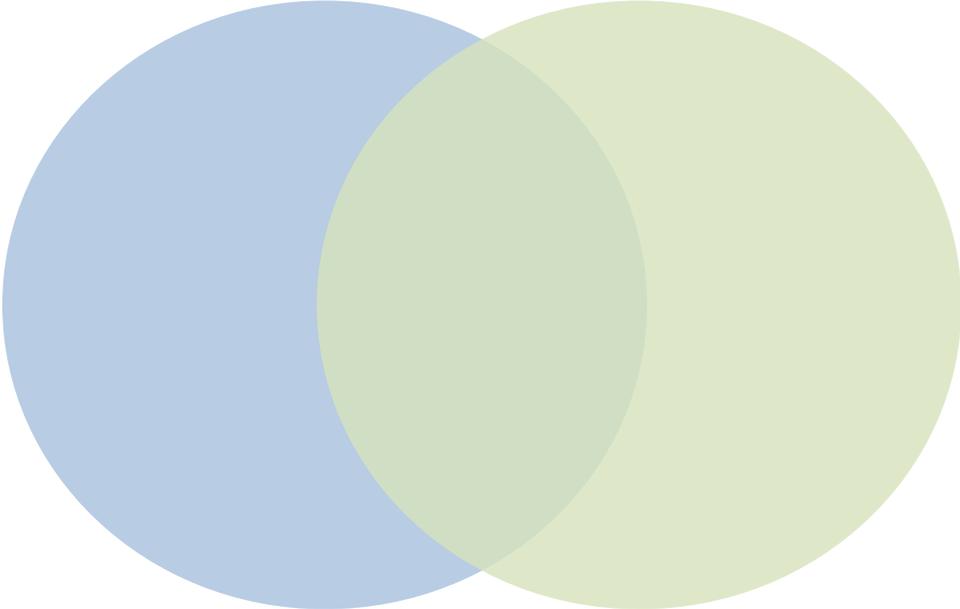
### The 'Apapane and the 'I'iwi



### How Can We Distinguish the 'Apapane from the 'I'iwi?

Both the 'Apapane and the 'I'iwi have survived in the rainforests of Hawai'i. Both birds can be seen in the forests of Hawai'i, Maui, and Kaua'i. An untrained eye could make a mistake in identifying these two birds because they look so similar. They are both about 5 ½ inches in length, and can be seen sipping the 'ōhi'a nectar. However, if you observe them, the 'Apapane also feeds on the koa, māmane, and eucalyptus flowers, whereas the 'I'iwi feeds on lobiliads. This is the reason why is because the 'I'iwi has a longer, salmon colored, curved beak. The 'I'iwi also feeds on insects and spiders; however, the 'Apapane feeds on only producers. Could you tell them apart if you saw them?

**Compare and Contrast**



# THE MENEHUNE AND THE BIRDS 1 LESSON 4

## Table of Contents

### Adapting and Integrating the Understanding of Adaptation in Hawai'i's Rainforest *Adapt, Exhibit, and Pose New Questions*

**Driving Question:** *Now that you understand adaptive behaviors of organisms in the rainforest, what can you do with this understanding?*

	Learning Engagements	Pages
I.	Creating a culminating product (See Appendix 4.1: <i>Adaptations</i> Rainforest Organisms)	48 51
II.	Presenting the culminating product ( See Appendix: 4.2: <i>Adaptations</i> Checklist)	49 57



# The Menehune and the Birds: Adaptations in Hawai'i's Rainforest

## Lesson 4

### *Mālama ika 'āina (Respect the Land)*

### Your Turn!

Because of the difficulty reaching the Hawaiian Islands, scientists think that a new species arrived and survived once every 35,000 to 50,000 years.



### Lesson Notes

#### I. Creating a Culminating Product

Students demonstrate their understanding of the concept of adaptation in the rainforest

#### Objective

Students demonstrate their understanding of adaptation of organisms in Hawai'i's rainforest by:

- Selecting or creating an organism that would survive in a particular layer of the forest.
- Accurately describing features and characteristics that help it to survive.
- Meeting the criteria determined by the class.

#### Materials

1. Adaptations in Hawai'i's Rainforest text-set.
2. Appendix 4.1: Adaptations Rainforest Organisms.
3. Appendix 4.2: Adaptations

### Adapting and Integrating the Understanding of Adaptation in Hawai'i's Rainforest

*Adapt, Exhibit, and Pose New Questions*

**Driving Question:** Now that you understand adaptation of organisms in the rainforest, what can you do with this understanding?

#### I. Creating a Culminating Product to Demonstrate Understanding of Adaptations

1. Select one of the following to complete as a class, in small groups or individually. These should be authentic school or community-based projects.
  - a. **“Photo Shoot”** on Page 21  
Take a walk through the nearest rainforest area. Take a photo of a unique organism. Find out what adaptations help your organism survive in its environment. Create an organism card with information about the organism and its ecosystem.
  - b. **“Insect Camouflage”** on Page 21  
The carnivorous caterpillar is an example of how camouflage helps an insect survive. *What were the features and behaviors of the carnivorous caterpillar that helped it to survive?*

- c. **“A Special Place”** on Page 21  
Take a trip to a forested area near you. If you are not close to one, locate a place where there is more vegetation than homes. Put into words your interaction with the place you have chosen.
  - d. **Rainforest Organisms**  
See Appendix 4.1 *Adaptations* Rainforest Organisms.
  - e. Your own idea.
2. With the students, outline the procedure for completing the task.
    - a. Determine what the students already know.
    - b. Determine the questions they need to research and the resources they need to answer their questions.
    - c. Outline an action plan.
    - d. Complete the project and present it to a school or community-based organization.
  3. Students and teacher review the criteria before, during, and after the project. (See Appendix 4.2: *Adaptations* Project Criteria)
  4. Generate ideas that serve as building foundations for the culminating activity of *The Menehune and the Birds*.

## II. Presenting the Culminating Project

### Objective

Students satisfactorily meet the project criteria.

### Length

45 minutes

### Materials

1. Presentation material.
2. Appendix 4.2: *Adaptations* Project Criteria Checklist.

### Ongoing

Students understand elements of stories that are passed down from one generation to the next.

## II. Presenting the Culminating Projects

Arrange for authentic audiences for students to present their final product.

1. Present to groups beyond the classroom with the intent to add to the community information about adaptations in Hawai'i's Rainforest.

**Assessment:** Student projects meet the project criteria. See Appendix: 4.2: *Adaptations* Project Checklist.

Based on understanding of adaptation of organisms in the rainforest, *what ideas would make for interesting stories that could be told and passed on from one generation to the next?* Possible ideas include:

- a. Other adventures of the Menehune and the organisms in the rainforest.
- b. The Hoary Bat was one of two mammals that made



- its way to the Hawaiian Islands. *What adaptations did it go through to survive?*
- c. *Was there an organism that didn't survive? What might it have been? Why didn't it survive?*

## Appendix 4.1: Adaptations Rainforest Organisms

### Rainforest Organisms

#### What is it?

In Rainforest Organisms, students will select one of the rainforest layers and invent a new organism that would not only survive in the selected environment, but would also be able to overcome predators and be known at the top of the Food Chain.

#### Purpose

*To apply adaptation concepts in science to help invent organisms in a selected rainforest environment.*

#### Materials

1. *Informational resources on the layers of the rainforest and organisms that survive in the Hawaiian rainforest.*
2. *Rainforest Feature Card Template.*

#### Procedure

1. Have pairs of students do research on their selected ancient Hawaiian rainforest environment and on conditions that impact survival such as climate, vegetation, land and water forms, and other animals.
2. Based on their research, invent a fictional organism that would survive in this environment.
3. On the front of the organism card, have students list three features that help the organism survive in its environment, and one feature that is NOT an adaptive feature of the organism. (See the Hoary Bat sample.)
4. On the back of the organism card, explain how each feature helps, or does NOT help it to survive.
5. Duplicate the cards for the class, and have the pairs complete the activity by having the students select the three adaptive features for each animal.
6. Have other students guess the environment of the animal.
7. Discuss any discrepancies or questions that may arise while sharing the cards.

#### Extension

1. As the cards are developed, students may create their own games using the completed cards, such as:
  - a. Matching the organism with its adaptive features.
  - b. Matching the organism and its environment.

#### Resources

**Biomes and Habitats:** This website includes pictures and descriptions of animals that live in the tropical rainforest [[www.enchantedlearning.com/subjects/rainforest/animals/Rfbiomeanimals.shtml](http://www.enchantedlearning.com/subjects/rainforest/animals/Rfbiomeanimals.shtml)].

**Extreme Science:** This website includes interesting information about environments and animals that can be used to support the research of students [[www.extremescience.com/creatport.htm](http://www.extremescience.com/creatport.htm)].

**Passport to the Rainforest:** This website includes comprehensive information about the natural habitat of animals in the rainforest [<http://passporttoknowledge.com/rainforest/main.html>].

**Living Things—Food Chains:** This website by the British Broadcasting Corporation (BBC) provides an interactive video, worksheet, test, and fact sheet on food chains [[www.bbc.co.uk/schools/ks2bitesize/science/activities/food\\_chains.shtml](http://www.bbc.co.uk/schools/ks2bitesize/science/activities/food_chains.shtml)].

**What's It Like Where You Live? Biomes of the World:** This website includes information about the ecosystems of the world with a child-friendly presentation [[www.mbgnet.net](http://www.mbgnet.net)].

## Sample Rainforest Organism

<p>Mr. Hoary</p> 	<p>Behaviors or physical features that help in:</p> <ul style="list-style-type: none"> <li>• <i>Getting its meal</i></li> <li>• <i>Protecting itself from being eaten</i></li> <li>• <i>Finding shelter</i></li> </ul>
	<p>Able to fly in dense forest</p>
	<p>Weighs only 6 ounces</p>
	<p>Eats flying insects, termites, and moths</p>
	<p>Fast beating wings</p>

### Back of the Card

X - Yes O - No	Behavior or Physical Feature	Explanation
X	Small body	Able to fly fast in thick forest
X	Powerful jaw	Able to crush hard-bodied insects
O	Sharp eyesight	Has poor eyesight
X	Radar	Poor eyesight, but has a good bat sonar

<b>Name:</b>	<b>Behavior or physical feature that helps in:</b>	
	<ul style="list-style-type: none"> <li>• <i>Getting its meal</i></li> <li>• <i>Protecting itself from being eaten</i></li> <li>• <i>Finding shelter</i></li> </ul>	

**Back of the Card**

X - Yes O - No	Behavior or Physical Feature	Explanation

## Appendix 4.2: Adaptations Project Criteria Checklist

Project Criteria Checklist		
Criteria	Yes	No
1. Does the project show the effect of adaptive or nonadaptive features?  <i>Are the adaptations recognized by the audience?</i> <i>Are the adaptations accurate?</i>		
2. Does the product hold the audience's attention?		
3. Does the product include in-depth details and examples?		
4. Do the graphics/photos enhance the featured presentation?		
5. Is the information organized?		

# Vocabulary Practice

THE MENEHUNE AND THE BIRDS:  
ADAPTATIONS IN HAWAI'I'S RAINFOREST

## The Menehune and the Birds: Adaptations in Hawai'i's Rainforest

### Cloze Sentences

*Select the appropriate word to complete each sentence.*

1. A long, thin, tube-like beak is an \_\_\_\_\_ that helps a honeycreeper survive.
  - a. adoption
  - b. admiration
  - c. adaptation
  - d. adoration
2. Many rainforest creatures are becoming extinct as their \_\_\_\_\_ are destroyed.
  - a. habitats
  - b. habitants
  - c. hamlets
  - d. hazards
3. All animals are \_\_\_\_\_ because they are living things.
  - a. organs
  - b. organizers
  - c. organzas
  - d. organisms
4. Many native plants of Hawaii need to be preserved, so we need a \_\_\_\_ plan of action in order to save them.
  - a. delicate
  - b. desolate
  - c. definite
  - d. deficit
5. Many indigenous birds in Hawai'i could not \_\_\_\_\_ due to deforestation and farming of their natural habitat.
  - a. surveillance
  - b. survey
  - c. survive
  - d. surround
6. Vegetables have \_\_\_\_\_ that help you grow.
  - a. nutrients
  - b. quotients
  - c. recipients
  - d. patients

7. A bear uses its sharp claws to \_\_\_\_\_ itself from enemies.
- a. pretend
  - b. content
  - c. extend
  - d. defend
8. Changes in weather patterns can \_\_\_\_\_ a healthy rainforest into a drier forest.
- a. transport
  - b. translate
  - c. transpire
  - d. transform
9. There isn't any \_\_\_\_\_ that he committed the crime.
- a. evasion
  - b. evidence
  - c. eviction
  - d. evolution
10. The \_\_\_\_\_ of a bird's wings helps it in flight.
- a. structure
  - b. fracture
  - c. picture
  - d. fixture

## The Menehune and the Birds: Adaptations in Hawai'i's Rainforest

### Matching Words with Definitions

*Select the word for the definition that is provided.*

1. change in a plant or animal that makes it better able to survive
  - a. adaptation
  - b. application
  - c. attraction
  - d. anticipation
  
2. an organism's natural living place or environment, which meets its needs to live and grow
  - a. halibut
  - b. hobbit
  - c. habit
  - d. habitat
  
3. any living thing
  - a. original
  - b. organism
  - c. ordinary
  - d. orderly
  
4. known for sure, certain
  - a. difficult
  - b. delicate
  - c. definite
  - d. decline
  
5. to continue to live or exist
  - a. deprive
  - b. revive
  - c. survive
  - d. arrive
  
6. an important substance that people, animals, and plants need to live, grow, and stay healthy
  - a. impatient
  - b. ancient
  - c. nutrient
  - d. lenient

7. a part of an organism
  - a. capture
  - b. structure
  - c. creature
  - d. mixture
  
8. to protect against being harmed or attacked
  - a. defeat
  - b. defect
  - c. defend
  - d. defer
  
9. something that helps prove whether or not something is true
  - a. evidence
  - b. confidence
  - c. influence
  - d. sequence
  
10. to change in form or appearance
  - a. inform
  - b. perform
  - c. platform
  - d. transform

## The Menehune and the Birds: Adaptations in Hawai'i's Rainforest

### Word Antonyms

**Select the appropriate antonym. Write the word in the blank.**

1. rare is to common as **definite** is to \_\_\_\_\_
  - a. vague
  - b. specific
  - c. precise
  - d. exact
  
2. near is to far as **survive** is to \_\_\_\_\_
  - a. exist
  - b. endure
  - c. live
  - d. perish
  
3. save is to spend as **defend** is to \_\_\_\_\_
  - a. protect
  - b. attack
  - c. save
  - d. conserve
  
4. sweet is to bitter as **transform** is to \_\_\_\_\_
  - a. renew
  - b. alter
  - c. adjust
  - d. preserve

## The Menehune and the Birds: Adaptations in Hawai'i's Rainforest

### Semantic Association of Words

*Select 2 words that are associated with the first word.*

1. **adaptation**
  - a. destroy
  - b. change
  - c. survival
  - d. perish
2. **habitat**
  - a. rule
  - b. habit
  - c. environment
  - d. surroundings
3. **organism**
  - a. plant
  - b. rock
  - c. animal
  - d. dirt
4. **definite**
  - a. certain
  - b. first
  - c. total
  - d. absolute
5. **survive**
  - a. allow
  - b. persevere
  - c. withstand
  - d. permit
6. **nutrient**
  - a. unhealthy
  - b. grow
  - c. waste
  - d. healthy
7. **defend**
  - a. protect
  - b. attack
  - c. charge
  - d. guard
8. **transform**
  - a. same
  - b. reshape
  - c. change
  - d. identical
9. **evidence**
  - a. elegant
  - b. proof
  - c. stylish
  - d. fact
10. **structure**
  - a. body
  - b. fly
  - c. peck
  - d. beak

## The Menehune and the Birds: Adaptations in Hawai'i's Rainforest

### Vocabulary Challenge 1

1. An example of an adaptation that helps an animal survive is \_\_\_\_\_.
  - a. a dog riding in a car
  - b. an elephant trained to do tricks
  - c. a penguin's wings shaped like flippers
  - d. a display of birds at the zoo
2. An example of a **habitat** is a \_\_\_\_\_.
  - a. museum
  - b. carnival
  - c. rain forest
  - d. shopping mall
3. An **organism** you would see at a park is \_\_\_\_\_.
  - a. museum
  - b. a water fountain
  - c. a statue
  - d. a shady tree
4. To make a **definite** choice when buying something at the store, you \_\_\_\_\_.
  - a. pick a certain item
  - b. get an approximate number
  - c. don't care which one you get
  - d. buy more than you need
5. Plants that **survive** after a forest fire must \_\_\_\_\_.
  - a. perish
  - b. die
  - c. stay alive
  - d. be burnt
6. Which probably has the LEAST amount of **nutrients**?
  - a. orange juice
  - b. soda
  - c. soup
  - d. milk
7. What is something that would cause people to **defend** themselves?
  - a. getting lost
  - b. losing a pet
  - c. eating bad food
  - d. an attack by an animal

8. An example of **transform** is \_\_\_\_\_.
- a. planning a party
  - b. transferring to another bus
  - c. making an old bike look new
  - d. going on a hike
9. If you need **evidence** of a creature that you saw, you need \_\_\_\_\_.
- a. proof that it exists
  - b. protection from it
  - c. to describe it
  - d. to write about it
10. Which of the following words does not describe the **structure** of an object?
- a. form
  - b. pattern
  - c. construction
  - d. vision

## The Menehune and the Birds: Adaptations in Hawai'i's Rainforest

### Vocabulary Challenge 2

- Which of the following is NOT an example of **adaptation**?
  - the arctic fox's thick fur
  - a pet dog's warm winter clothing
  - a duck's webbed feet
  - the bat's use of echo to locate objects
- Which of the following is true about an animal's **habitat**? It is \_\_\_\_\_.
  - a repeated action
  - something dangerous
  - a place that provides everything it needs to survive
  - a natural resource
- If you need to share an **organism** in your science class, you would NOT take \_\_\_\_\_.
  - your pet mouse
  - your mother's potted plant
  - your toy robot
  - your ant colony
- A **definite** answer to a question is \_\_\_\_\_.
  - maybe
  - yes
  - I think so
  - I don't remember
- To **survive** a tsunami, your best hope is \_\_\_\_\_.
  - swimming into it.
  - jumping real high.
  - picking up the stranded fish.
  - moving to high ground.
- An example of **defend** is \_\_\_\_\_.
  - a mother bear protecting her cub
  - a cat circling a bird cage
  - a bird swooping down to catch a fish
  - wearing knee pads while skateboarding
- Which of the following is NOT an example of **transform**?
  - a sofa that changes into a bed
  - leaves that turn red during fall
  - a frog that turns into a prince
  - a desk that is moved across the room

8. An example of **evidence** is \_\_\_\_\_.
- a. a morning jog
  - b. doctor appointments
  - c. a caterpillar changing into a butterfly
  - d. footprints at a crime scene
9. To change the **structure** of a building, you can \_\_\_\_\_.
- a. paint it
  - b. rebuild it differently
  - c. put furniture in it
  - d. move in it
10. An example of **nutrient** is \_\_\_\_\_.
- a. care that is given to a person
  - b. food that helps an organism to grow
  - c. a place where plants grow
  - d. not taking sides

## The Menehune and the Birds: Adaptations in Hawai'i's Rainforest

### Answer Sheet

Cloze Sentences	Word Definitions	Word Antonyms	Semantic Associations	Challenge 1	Challenge 2
1. adaptation	1. adaptation	1. vague	1. b. change c. survival	1. c. a penguin's wings shaped like flippers	1. b. a pet dog's warm winter clothing
2. habitats	2. habitat	2. perish	2. c. environment d. surroundings	2. c. rain forest	2. c. a place that provides everything it needs to survive
3. organisms	3. organism	3. attack	3. a. plant c. animal	3. d. a shady tree	3. c. your toy robot
4. definite	4. definite	4. preserve	4. a. certain d. absolute	4. a. pick a certain item	4. b. yes
5. survive	5. survive		5. b. persevere c. withstand	5. c. stay alive	5. d. moving to high ground
6. nutrients	6. nutrient		6. b. grow d. healthy	6. b. soda	6. a mother bear protecting her cub
7. defend	7. structure		7. a. protect d. guard	7. d. an attack by an animal	7. a desk that is moved across the room
8. transform	8. defend		8. b. reshape c. change	8. c. making an old bike look new	8. d. footprints at a crime scene
9. evidence	9. evidence		9. b. proof d. fact	9. a. proof that it exists	9. b. rebuild it differently
10. structure	10. transform		10. a. body d. beak	10. d. vision	10. b. food that helps an organism to grow