

# THE MENEHUNE AND THE BIRDS: INTERDEPENDENCE IN HAWAI‘I’S RAINFOREST

## Lesson 1

### Table of Contents

#### Developing Background

*Focus, Make Connections, and Reflect*

**Driving Question:** *Why is a healthy forest habitat important to you?*

Learning Engagements	Pages
I. Reflecting and connecting	2
II. Simulating a healthy habitat	3
III. Completing the <i>Interdependence Four Squares</i> (See Appendix 1.1: <i>Interdependence Four Squares</i> )	5 6



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

## Lesson 1

*Mālama ika 'āina (Respect the Land)*

Every Menehune knows that little ones working together can accomplish big things.



### Lesson Notes

#### I. Reflecting and Connecting

##### Concepts/Themes

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

A range of environmental conditions must exist to meet the specific needs of an organism to survive.

Organisms respond to each other in their environment.

##### Objectives

1. Students understand the concept of *laulima* (working together) from a variety of contexts (in the forest, at school, at home, within the community) as reflected in their daily practices.
2. Students describe the roles of various organisms in the same environment.

##### Length

30 minutes

### Developing Background

*Focus, Make Connections, and Reflect*

**Driving Question:** *Why is a healthy forest habitat important to you?*

#### I. Reflecting and Connecting

1. Have students enter personal reflections and record at least two personal responses to the driving question in their *E Ho'oumau!* journals. Related questions might include:
  - a. *What must a healthy habitat include?*
  - b. *What happens if one part of a habitat is lost?*
  - c. *What holds a healthy community together?*
  - d. *Why is this healthy habitat important to you?*
2. Conduct a Class Discussion
  - a. Start the discussion with students sharing one idea from their journal.
  - b. Related questions might include: *What are examples of healthy habitats?*
  - c. Encourage students to use examples from their *Adaptation* lessons.
  - d. Extend the idea beyond the rainforest, into family communities, school communities, neighborhood communities, and global communities.

**Materials**  
Journals.

## II. Simulating a Healthy Habitat Game

**Materials**  
3x8 colored (9 sets)  
construction paper strips  
labeled **food, water, shelter**.

The responses reflect student experiences and provide insights into the background information they bring to the lesson. Students may include ideas that were developed in lessons related to the animated stories from *The Menehune and the Birds*, or from their own personal experiences.

## II. Simulating a Healthy Habitat Game

The Healthy Habitat game is a variation of tag, or musical chairs, played by students. Select the variation that works best for your class. The object of the game is to form groups with the essential elements that make a healthy environment. The last group that is able to include all healthy elements is the winner.

1. Students are given labels that are essential to a healthy environment (e.g., food, water, shelter). These labels may be taped on the student's back shoulder.
  - a. There should be one component missing to represent a missing link.
2. Provide students with the game rules:
  - a. The object of the game is to create groups with all three elements that create a healthy environment for an organism.
  - b. Stay within the designated area.
  - c. Rough taggers are out.
  - d. Labels are clearly taped onto the backs of students.
3. Students scatter in the designated area.
4. The teacher gives a signal such as a whistle. At the sound of the whistle, students quickly form habitat groups (one component of the environment for each group). A variation would be for students to hold batons or use their arms as linkers.
  - a. The group that is missing a component is out.
  - b. If an arm link or baton link is broken, the team is out.
5. Students scatter again.
  - a. The teacher takes one link out of the remaining students.
6. Continue the game until there are two to three remaining groups.

7. Debrief in a class discussion.

- a. Pose questions that will elicit the association with the idea of interdependence. Questions may include:  
*What happened when one element was missing?*
- b. In a healthy habitat, organisms depend on one another for their food, shelter, and water. *What is an example of organisms depending on each other in the rainforest? What are examples of people in a school, classroom, and family depending on each other?*

**Variations of the Game:**

1. Chairs (like musical chairs) can be labeled with the essential habitat survival needs.
2. Labels may include organisms that depend on each other, instead of essential needs of survival.

**Assessment:** Observe that students identify other healthy environments such as the school, community, or family.

### III. Completing the Interdependence Four Square

#### 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, and electronic).

#### Objective

Students are able to independently provide an example, nonexample, and the definition (in their own words) of a target word.

#### Materials

Appendix 2.1: Interdependence Four Squares.

#### Hawaiian Words

Laulima

'Ohana (family)

Kokua (help)

### III. Completing the *Interdependence* Four Square

In a healthy habitat, the organisms depend on one another for their food, shelter, and water. To survive, communities are built.

1. Conduct a class discussion about communities.
  - a. *What is a community?*
  - b. *What are examples of communities?*
    - i. Illicit a range of communities—families, school, community teams, school committees, clubs, etc.
  - c. *Who makes up these communities?*
  - d. Besides the basic needs of food, shelter, and water, *what helps the community survive, or reach its goals?*
2. Introduce the concept of interdependence.
  - a. Perform a prefix and suffix removal to see the word depend.
  - b. Students provide examples of people depending on one another.
  - c. Adding *inter-* to the word *depend* means there is more than a one-way dependence.
3. Have students complete a four square activity with a partner.
  - a. Include the Hawaiian words *laulima*, *'ohana*, and *kokua*.
4. Share and display the student four squares. Students return to these squares at the end of *The Menehune and the Birds* lessons to compare their perspectives of interdependence.

## Appendix 2.1: *Interdependence 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**

Blank copy of the *Four Squares Template*.

#### **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 or 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 the 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 or 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 or 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 or section of the paper.

#### **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 Wordlist

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

## Four Squares

<p>Word</p> <p>Interdependence</p>	<p>Examples of the Word or Concept</p>
<p>Definition of the Word</p>	<p>Nonexamples of the Word or Concept</p>

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



# THE MENEHUNE AND THE BIRDS: INTERDEPENDENCE IN HAWAI‘I’S RAINFOREST

## Lesson 2

### Table of Contents

#### Understanding Interdependence

*Acquire, Process, Understand, and Conceptualize Knowledge*

**Driving Question:** *What interdependent behaviors help organisms survive in the Hawaiian rainforest?*

Learning Engagements	Pages
I. Understanding interdependent relationships in the rainforest (See Appendix 2.1: <i>Interdependence</i> Graphic)	10 14
II. Developing word learning strategies using word parts (See Appendix 2.2: <i>Interdependence</i> Word Part Strategies) (See Appendix 2.2a: <i>Interdependence</i> Prefix and Suffix Squares)	12 16 19
III. Understanding the impact of invasive species on the rainforest (See Appendix 2.3 <i>Interdependence</i> Cause and Effect)	12 25

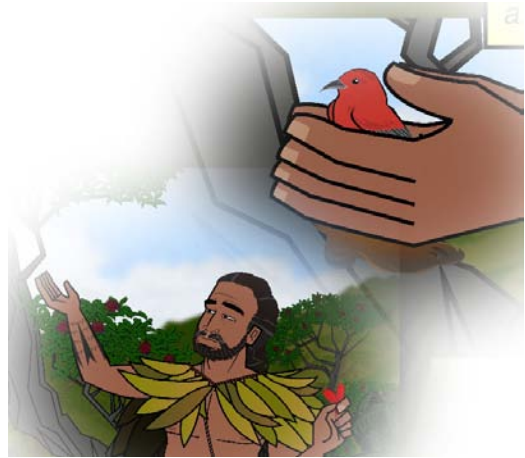


# The Menehune and the Birds: Interdependence in Hawai'i's Rainforest

## Lesson 2

*Mālama ika 'āina (Respect the Land)*

*The interdependence among the organisms, including humans, has kept the rainforest in balance.*



### Lesson Notes

#### I. Understanding Interdependent Relationships in the Rainforest

##### Concepts/Themes

*Interdependence among organisms allows them to survive in an environment.*

*A range of environmental conditions must exist to meet the specific needs for survival of an organism.*

##### Objectives

1. Students describe an interdependent relationship that exists in the rainforest.
2. Students accurately complete the interdependent graphic to demonstrate the idea of interdependence.

##### Length

45 minutes

### Developing an Understanding of Interdependence

*Acquire, Process, Understand, and Conceptualize Knowledge*

**Driving Question:** *What interdependent behaviors help organisms survive in the Hawaiian rainforest?*

#### I. Understanding Interdependent Relationships in the Rainforest

Information from the animated story and science text-sets provide the content for understanding interdependence in Hawai'i's rainforests.

1. Conduct a class exploration of *Interdependence in Hawai'i's Rainforest*.
  - a. Discuss the relationships that exist in the rainforest, including in the early Hawaiian period. Scan Pages 1–7 in *Interdependence in Hawai'i's Rainforest*.
    - i. Pages 1–4: Akua and the Forest
    - ii. Pages 5–7: People of Early Hawai'i.
2. Read Pages 1 and 2 together as a class.
  - a. Before written information was kept, the early Hawaiians passed on their information in the form of chants and dances. Since then, some of the

**Materials/Resources**

1. *Interdependence in Hawai'i's Rainforest science text-set.*
2. *Appendix 2.1: Interdependence Graphic.*

**Hawaiian Words**

akua  
knolau  
kuleana

- chants and dances have been transcribed, or interpreted and written.
- b. According to the chant of long ago, *who were the first dwellers of the forest?*
  - c. *How did the forest depend on akua for its survival?*
  - d. *How did the akua depend on the forest for its survival?*
3. Read "Think About It" on Page 1 in *Interdependence in Hawai'i's Rainforest*.
    - a. *What was the relationship of the early Hawaiian people and the forest?*
    - b. *What practices were followed by the early Hawaiian people when they interacted with the forest?*
    - c. Select words and phrases that express this relationship.
  4. As a class, show the interdependence among the akua and the forest on Pages 3 and 4 in *Interdependence in Hawai'i's Rainforest*.
    - a. Show the relationship using the graphic from Appendix 2.1: *Interdependence Graphic*.
    - b. Note: This is a variation of a cause and effect structure which shows cyclical effects. (Students may also create their own cause and effect graphic organizers that express the same relationships.)
  5. Have students work with partners on understanding one of the following interdependent relationships:
    - a. Bird catchers / ancient Hawaiian forest
    - b. Canoe makers / ancient Hawaiian forest
    - c. Māmaki shrub / Kamehameha caterpillar
    - d. Kāhuli snail / Mehame plant
  6. Students share their interdependence graphic map.
  7. Summarize the information provided by each group.
  8. Lead a classroom discussion on the early Hawaiians' dependence on the forest.
    - a. Emphasize the practices followed in interacting with the forest.

9. Compare interdependence between man and the forest, and between organisms.
10. Summarize by discussing the different interdependent relationships in the rainforest.

**Assessment:** Students select one type of interdependent relationship. Write a description of how interdependence is exhibited. Include a drawing to convey the written message.

## II. Developing a Word Learning Strategy Using Word Parts

### Objectives

1. Students accurately complete a suffix removal strategy to figure out the meaning of three targeted words: consumer, producer, and decomposer.

### Length

45 minutes

### Materials

1. *Interdependence in Hawai'i's Rainforests* text-set.
2. Appendix 2.2: *Interdependence Prefix and Suffix Introduction*.
3. Appendix 2.2a: *Interdependence Suffix Squares*.
4. List of science words with suffixes such as producer, consumer, and decomposer.

## III. Understanding the Impact of Invasive Species

### Objectives

1. Students identify at least two invasive species in the rainforest.
2. Students provide examples to support the saying, "Hawai'i is the extinction capital of the world."

## II. Developing a Word Learning Strategy Using Word Parts

The rainforest ecosystem is made up of organisms that interact with one another and their environment. In the ecosystem, every organism needs energy to survive and grow. The energy needed comes in the form of the sun and food that the organisms eat.

1. Read Page 8 in *Interdependence in Hawai'i's Rainforest* focusing on the three types of organisms in the rainforest: producers, consumers, and decomposers.
2. Using the information, model with the students the strategy to unlock words with suffixes. (See Appendix 2.2: *Interdependence Prefix and Suffix Introduction*)
  - a. Model with the sample word, *survivor*, using the Prefix and Suffix Squares.
3. Have each student complete suffix squares for *producer*, *consumer*, and *decomposer*. (See Appendix 2.2a: *Interdependence Prefix and Suffix Squares*)

**Assessment:** Students need many opportunities to practice the word learning strategies to unlock the meanings of unfamiliar words. Have students identify the steps as they use the strategy to complete the suffix squares for *producer*, *consumer*, and *decomposer*.

## III. Understanding the Impact of Invasive Species on the Rainforest

1. Conduct a discussion on things that might harm the forest habitat.
  - a. Read Pages 11–12 together.
  - b. Define the word *invasive* (invade areas, such as the forest).
  - c. Emphasize the characteristics of an *invasive*

**Length**

45 minutes

**Materials**

1. Appendix 2.3: *Interdependence Cause and Effect*.
2. 8 ½ x 11 sheets of paper halved lengthwise (three per pair of students).
3. Prepare Table Headings on a Bulletin Board.
4. *Interdependence in Hawai'i's Rainforests* text-set.
5. Appendix 2.2: *Interdependence Suffix Squares*.

species. (Grows quickly, reproduces rapidly, spreads easily, adapts easily, and eats lots of food.)

- d. Summarize by asking students, *why is Hawai'i known as the "extinction capital of the world?"*
2. Students complete a cause and effect chart. Place chart headings on a bulletin board:

**Characteristics of Invasive Species**

- a. Assign pairs one of the invasive species from Pages 13–16 in *Interdependence in Hawai'i's Rainforests*.
- b. Provide students with sheets of papers (8 ½ x 11), halved lengthwise. Each sheet represents a cell of the chart.
- c. Students record the following information about each invasive species. Note: Teachers may add other categories such as how these species arrived in Hawai'i.
  - i. Sheet 1: Name and picture of invasive species.
  - ii. Sheet 2: Characteristics that make it invasive.
  - iii. Sheet 3: Effect to the rainforest or rainforest organisms.

Note: Some of the invasive species may have several effects, which could also be causes for other effects. Add these on separate sheets.

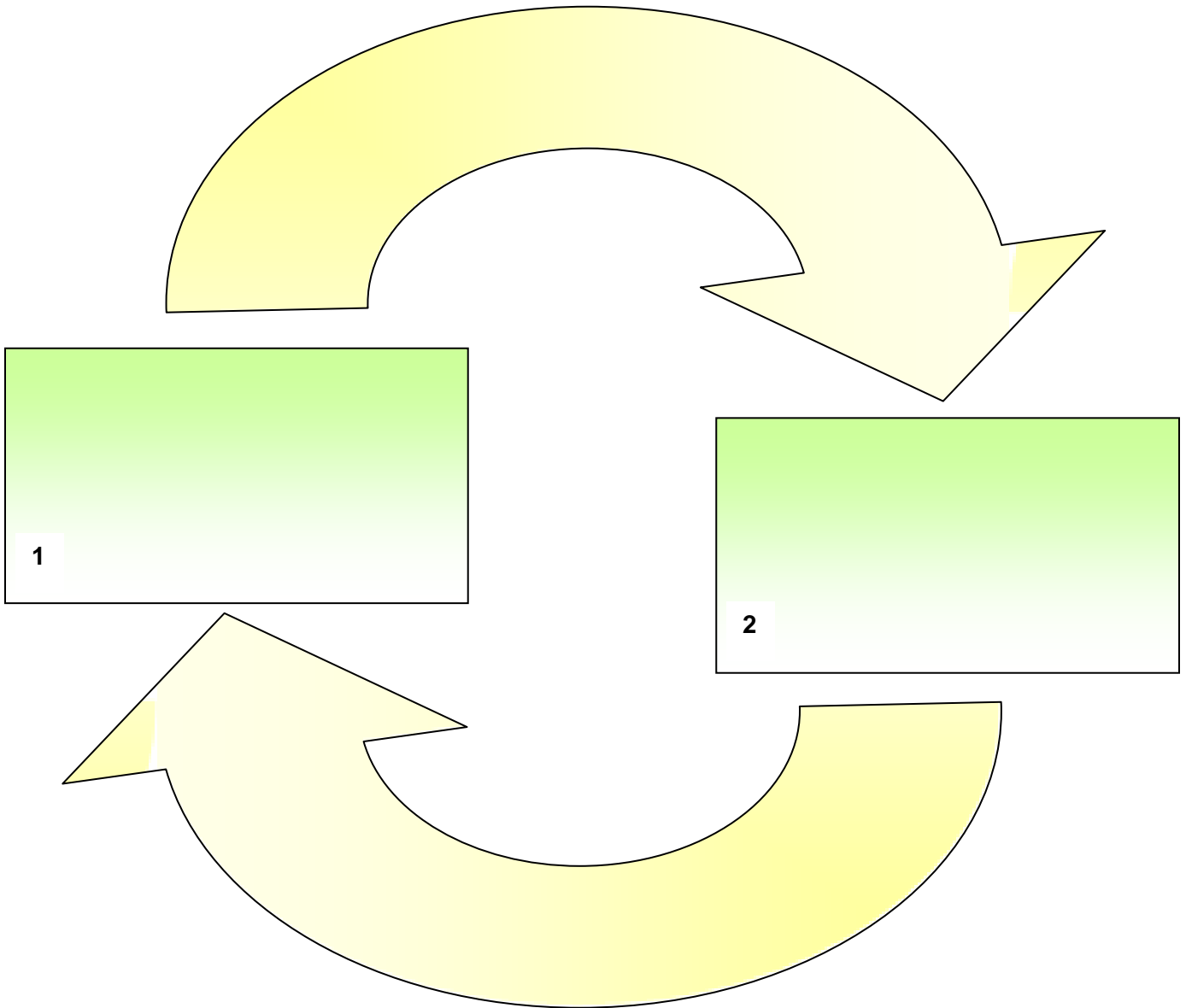
3. Students share the paragraph assigned and their cause and effect strips, then place them in the right cell of the table.
4. Summarize the findings by analyzing the chart.
5. Students write a paragraph of the effect of invasive species on the rainforest. *Why is Hawai'i considered "the extinction capital of the world?"*
6. Students identify two species they didn't expect to be invasive. Explain what action they can participate in, to stop invasive species from harming the rainforest. (This may be part of the culminating product for some of the students.)

**Assessment:** Review student's completed cause and effect activity (See Appendix 2.3: *Interdependence Cause and Effect*)

**Appendix 2.1: Interdependence Graphic**

**Interdependence**

How does organism 1 depend on organism 2?



How does organism 2 depend on organism 1?

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

## Explain the Interdependence Between the Organisms

---

---

---

---

---

---

---

---

---

---

---

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

## Appendix 2.2: *Interdependence* Word Part Strategies—Suffixes (Introduction)

### Word Part Strategies—Suffixes

#### Explicit Instruction

#### Overview

Instruction in word parts is a valuable word-learning strategy, particularly for English language learners and struggling readers. There are a relatively small number of affixes that are used in a large number of words. The following affixes are introduced in *E Ho‘omau!*

- **un-, dis-, re-, in-** (*im-*, *ir-*) are the four most frequent prefixes that account for 58 percent of prefixed words in printed school English
- **-ly, -er (-or) -ion** (*-ation, -ition*), **-able, -ible** are four of the seven most frequent suffixes that account for 82 percent of suffixed words in printed school English.

(White, T., Sowell, J., & Yanagihara, A. (1989). Teaching elementary students to use word-part clues. *The Reading Teacher*, 42, 302–309.)

A suffix is a group of letters added at the end of a word. Learning these word-endings can help students recognize whether a word is a noun, verb, adjective, or adverb. Note: the lesson focuses on *derivational suffixes*, not *inflectional suffixes*. *Derivational suffixes* change the meaning of the base word and are usually a different part of speech. The meaning of the word is related to the original meaning—it is *derived* from the original meaning.

Since suffixes are often abstract and it is difficult to explain their meanings, instructional process focuses on suffix removal. By separating a suffix from the base word, students can recognize or decode the base word and then reapply the suffix.

Emphasize the use of word-part clues with context clues to verify the meanings of the affixed words since there are multiple meanings to many words.

An effective process is the application of a *think-aloud strategy*. Using think-aloud will provide learners with a tool they can use to unlock unknown words independently. In this process, the learners:

1. Identify and remove the suffix in a word.
2. Understand when a suffix is removed there may be something left that *looks* like a word.
3. Determine and identify the base word.
4. Determine whether it is a suffix that can help unlock the word's meaning. (*Does the base word look like a word you might know?*)
5. Use context clues to verify the word's meaning.



## Think-Aloud Strategy

1. When I come to an unknown word that may contain a suffix, remove the suffix.

An early Hawaiian **explorer** used his canoe with the help of the wind, currents, stars, and sun to guide him.

**explorer (n.)**—take away the suffix **-er**

2. Look at what is left.  
**explore**
3. Ask yourself, *do I know what the word means?*  
**explore** means to travel from place to place; to discover
4. *Can the suffix unlock the meaning of the word?*  
**-er** added to something that is done, such as explore, usually refers to a person.
5. Use the context of the sentence to unlock the meaning of the word.  
A Hawaiian **explorer** is a person who travels from place to place to discover something.
6. Summarize the process. By taking away the suffix, you may recognize the meaning of the word base. Knowing how the suffix changes either the meaning, or the part of speech of the word, will help you unlock the meaning of the word. You can verify the meaning by using other clues in the sentence.
7. Use other examples with the think-aloud process:

Word	Take away the suffix	Word you know or like a word you might know	Meaning of the base word	New Meaning
teacher (n.)	er	teach (v.)	to instruct	one who instructs
brotherly (adv.)	ly	brother (n.)	a male sibling	like a brother
agreeable (adj.)	able	agree (v.)	to have the same opinion	able to have the same opinion
exploration (n.)	ation	explore (v.)	to travel to places; to discover	the process of traveling from place to place; to discover

Suffixes change the meaning and may change the part-of-speech of a word. See how the common suffixes used in the *E Ho'omau!* material can help you unlock the meaning of unknown words.

Suffix	Changes the part-of-speech to	Example original word	Example suffixed word	Changed Meaning
-ation	verb→noun	explore (v.) hesitate (v.)	explor <b>ation</b> hesit <b>ation</b>	act of, state of, result of
-sion		persuade (v.) divide (v.)	persuas <b>ion</b> divis <b>ion</b>	act of, state of, result of
-er		teach (v.)	teach <b>er</b>	one who, that which
-able	verb →adj.	tax (n., v.)	tax <b>able</b>	can, can do, able to
-ly		brother (n.)	brother <b>ly</b>	Characterized by
-ly	verb→adverb	hope (v., n.)	hope <b>fully</b>	like

**Practice Words With Targeted Suffixes in *The Menehune and the Birds***

Booklet 1	Booklet 2	Booklet 3
adequately approximately conductor consumer definitely provider survivor	absorption consumer decomposer habitable identifiable producer responsible transferable	absorption adaptation conservation elimination extinction preservation protection

Provide multiple opportunities to practice and apply the suffix removal strategy.

Practice Sentences

1. The **survivors** of the rainforest were able to adapt to the conditions of their environment.
2. 'I'iwi vines provided food for the **consumers** such as the 'i'iwi whose beak over years, developed into a shape of the 'i'iwi flower.
3. The Hawaiian Islands are located **approximately** 2,500 miles away from the nearest continent.
4. Everyone is **responsible** for keeping invasive species from ruining our rainforests.
5. The kapu system of the early Hawaiian communities was a natural way to practice **conservation** of the 'aina.

## Appendix 2.2a Interdependence Prefix and Suffix Squares

### Prefix or Suffix Squares

#### What is Prefix and Suffix Squares?

Prefix and suffix squares is a strategy that students can use to make personal associations with unfamiliar words by using graphics as they learn the meanings of prefixes and suffixes. As students learn the strategy, encourage them to apply it in a variety of contexts to develop their problem-solving skills in using the word parts to understand the meaning of the unknown word.

#### Purpose

1. Build word consciousness.
2. Create personal associations in picture form for unfamiliar words.
3. To develop the strategy to independently figure out the meanings of unfamiliar words that begin with a prefix or end with a suffix.

#### Materials/Resources

1. Blank prefix-suffix squares template.
2. Drawing tools.
3. Dictionary.

#### Procedure


1. Introduce the idea to the class by modeling the process with a few examples. Using the *think-aloud strategy* (See *Vocabulary Instruction: Developing Generative Vocabulary Knowledge* and Appendix 2.2 *Interdependence Word Part Strategies—Suffixes*) will help students develop the skills of independently applying the strategy when they encounter an unfamiliar word with a prefix or suffix.
2. Divide a drawn square into four parts and label the parts according to the prefix/suffix sample.
3. In the top-right corner, write a word that has the prefix or suffix that the class is focusing on.  
*Prefixes (un-, dis-, in-, im-, ir-)*  
*Suffixes (-er, -ly, -able, -ible, -ion, -sion, -tion, -ation)*
4. Remove the prefix or suffix and place it in the top-left corner of the square.
5. It is also important to have students be aware of prefix tips.
  - a. Check to see if the part of the word left is a real word. Not all *un-* are prefixes. For example in the word *uncle*, removing the *un-* leaves (*cle*) which is not a base word. So *un-* in *uncle* is NOT a prefix.
  - b. Prefixes have more than one meaning. For example, *un-* may mean *not* (unhappy) or *do the opposite of* (uncover).
6. Use the context of the word to figure out the meaning of the word. In other words, do not only rely on the prefix and suffix.

7. In the bottom-left corner, write the meaning of the prefix or suffix.
8. In the bottom-right corner, draw a picture of the word and add a caption to it.
9. Have students collect words that share the same prefixes and suffixes that are the focus of study. In *E Ho'ōmau!* the students encounter the following prefixes:  
Prefixes *un-, dis-, in-, im-, ir-, re-*  
  
Suffixes *-ly, -ion, -tion, -ation, -ition, -er, -or, -able, -ible*
10. Students share their squares by placing squares with similar prefixes together on a display board.
11. Have a discussion with the students focused on arriving at the meaning by removing the prefix or suffix, seeing it in context (caption) and associating the word with the picture.

## Reference

Bromley, Karen. (2002). *Stretching students' vocabulary: Vocabulary squares*, pp. 85–86. NY: Scholastic Professional Books.

## Prefix Square


<p>Prefix</p> <p><b>un-</b></p>	<p>A Word With the Prefix and its Meaning</p> <p><u>Unsafe</u> Not safe or dangerous</p>
<p>Meaning of the Prefix</p> <p><b>not</b></p>	<p>Graphic of the Word</p>  <p>It is <b>unsafe</b> to be in the water or near a site where the lava enters the ocean.</p>

## Prefix Square

Prefix	A Word With the Prefix and its Meaning
Meaning of the Prefix	Drawing of the Word  Caption Sentence

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

## Suffix Square

<p>Suffix</p> <p><b>-or</b></p>	<p>A Word That Has the Suffix and its Meaning</p> <p><u>Survivor</u></p> <p>That which survives One who continues to live</p>
<p>Meaning of the Suffix</p> <p>that which one who</p>	<p>Graphic of the Word</p>  <p><b>Survivors</b> of the rainforest adapted well to their environment.</p>

## Suffix Square

Suffix	A Word That Has the Suffix and its Meaning
Meaning of the Suffix	Graphic of the Word  Caption Sentence

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



## Appendix 2.3: *Interdependence* Text Structure: Cause and Effect Introduction

### Cause and Effect

#### *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.

#### **Cause/Effect**

Cause and Effect text structure is used frequently in social studies and science text. Cause and effect is a text pattern that explains why or how something happened. It is also a dominant pattern used in social studies text books. “McCormick (2003) has suggested that this structure is difficult because of the complex comprehension skills (i.e., making inferences, judging sequence, and making predictions) involved in the interpretation of causes and effects” (Williams, p. 112). See Table 1 below for additional information about the text structure of cause and effect.

#### **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 cause and 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, help them to organize information, and see how the major ideas are related. They help students to 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 Cause/Effect**

**Text Structures and Signal Words**

Text Structure	Description of Structure	Signal Words:	Sample Graphic Organizers
<p><b>Cause/Effect</b></p>	<p>Texts that follow this structure tell what happened and why it happened.</p> <p>Example: Why do stars twinkle? “In the center of the star, the gas hydrogen is changed into another gas called helium. Consequently as the gas changes, the star gets very hot and gives off the brilliant light that is seen. When the light from the stars travels through layers of gas that surround Earth, they appear to twinkle.” (From <i>Our Earth, the Sun, and the Stars</i>)</p>	<p>because, so that, thus, unless, therefore, since, in order to, as a result of, this led to, then, reasons for, then...so, for this reason, consequently, an explanation for, accordingly, begins with, effects of, if...then, is caused by, may be due to, so that, steps involved, thereby, thus..., when...then.</p>	

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, 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 2.3: *Interdependence Cause and Effect Lesson*

### Cause and Effect

#### **Purpose**

Use organizational pattern and cause/effect to access and understand information.

#### **Materials**

1. Graphics: *The Menehune and the Birds* images that could be used as “causes,” or “effects.”
2. Cause and effect sentence strips (larger version of sorting cards) to place on chart paper or completed chart.
3. *Interdependence in Hawai'i's Rainforest* text-set.

#### **Procedure**

1. Picture 1: Display picture of pockets of collected rainwater
2. Discuss what could have caused what they see. Possible responses include:
  - Erosion of soil
  - Plants dying and not replaced
  - Animals uproot plants
3. Picture 2: Display picture of kāhili ginger. Predict what possible effects might occur from what they see.
  - Crowd other plants out
  - Humans pick plants and trample over other plants
  - Adds food source for the insects
4. Explain how a lot of what happens in our lives is due to cause and effect relationships.
  - a. Cause (why it happened) and effect (what happened as a result of, or as a consequence)
  - b. Connect to an event that occurred in school or neighborhood. Identify the cause and effect relationships.
  - c. Traffic investigators look for the cause of car accidents; doctors do an autopsy to find out the cause of death, etc. (Think of other examples.)
  - d. Summarize: Cause is an event that happened first that leads to the effect, which is what happened last.
5. Do PowerPoint matching squares as a class. (See [www.quia.com/mc/94601.html](http://www.quia.com/mc/94601.html)). Students may want to complete this independently as an extended activity.
6. Identify the cause and effect statements and model expanding the relationship using cause and effect signal words.
  - a. Have students practice using a few signal words orally in the context of joining the two statements.
  - b. Present the Cause and Effect Signal Word Chart.
  - c. Extend this activity by having the cause

To assess student understanding of cause and effect relationships and demonstrate an understanding of the cause of day and night.

statements/effect statements on sentence strips. In groups of 3, two students hold sentence strips (one cause, and one effect) and the third student selects an appropriate signal word. The students rearrange themselves to create a cause and effect sentence.

- d. Explain that in reading, there are words that often act as signals telling readers that there is a cause/effect relationship.

7. Model reading and completing a cause and effect graphic organizer.

- a. Underline the cause once, underline the effect twice, and circle the signal words.

**Assessment:** Review the standards/objectives related to cause and effect text structures. Use *organizational pattern* (cause and effect) to access and understand information.

Use the opportunities during the lesson to observe student understanding of cause and effect relationships.

- Observation: Check for understanding in partner activity.
- Conversation: Conversation between students working in pairs and small groups to determine if they were able to identify and differentiate between a cause and an effect.
- Written evaluation: Check student work for evidence of correctly generating a cause and/or effect written statement.
- Student self-evaluation: Self-check using the checklist.

### Appendix 2.3: *Interdependence Cause and Effect Checklist*

\_\_\_\_\_ Identify cause and effect statements.

\_\_\_\_\_ Identify the characteristics of cause and effect relationships.

\_\_\_\_\_ Identify and use appropriate signal words for cause and effect relationships.

\_\_\_\_\_ Use visual representation to show how cause and effect relationships are organized and presented.

\_\_\_\_\_ Construct cause and effect written statements.

\_\_\_\_\_ Apply the use of cause and effect text structure to explain why day and night occur.

## Appendix 2.3: Interdependence Cause and Effect Graphic Organizer

### CAUSE AND EFFECT

#### CAUSE

*WHY SOMETHING HAPPENED?*

*The CAUSE happens FIRST.  
Ask yourself, what had to happen first?*

#### EFFECT


*WHAT HAPPENED?*

*The EFFECT happens SECOND.  
Ask yourself, what happened last?*


<b>Cause</b> <b><i>(Why Something Happened?)</i></b>	<b>Effect</b> <b><i>(What Happened?)</i></b>
	

1. *What do you see in the photo? (What you see is the cause.)*
2. *What possible effects might occur? ( \_\_\_\_\_ could occur because of the fast growth of the Kāhili ginger.)*

As terrible as they are, many invasive species are quite attractive. This is one of the main identifiable reasons why people bring them to the islands, because they look pretty. The kāhili ginger is a perfect example. It is a producer of fragrant flowers arranged like a Hawaiian kāhili. It adapts easily to wet areas and grows very easily. Its roots grow very closely together. As a result, the roots choke out any plant in its path, not giving it **adequate** space to survive.

Name and Picture of the Invasive Species	Characteristics That Make it Invasive	Effect on the Rainforest or Rainforest Organisms
 <p data-bbox="310 531 467 558"><b>Kāhili Ginger</b></p>	<ul style="list-style-type: none"> <li>• Adapts easily to wet areas</li> <li>• Grows easily</li> <li>• Roots grow very closely together</li> </ul>	<p>Chokes out any other plant by not giving it adequate space to live</p>

<b>Cause</b> <b>(<u>Why</u> Something Happened)</b>

<b>Effect</b> <b>(<u>What</u> Happened?)</b>


1. *What do you see in the photo?*
2. What you see is the effect of, or what happened as a result of: \_\_\_\_\_
3. *What might have caused this?*

One of the worst invaders in rainforests is wild pigs. These four-legged animals aggressively toss and turn the soil with their snouts and uproot native plants. As a result, deep pockets of soil that easily collect rainwater are created. Mosquitoes then breed in the standing water. Mosquitoes are carriers of *Avian Malaria*, a disease that can be fatal to native birds.

Pigs also quickly speed up erosion of our rainforests. When there are heavy rains, the uprooted soil flows into streams and eventually ends up in our ocean. The soil then acts as a huge brown cloud that smothers coral reefs and prevents sunlight from penetrating the water. This in turn kills the reef and marine life. It is astonishing to see how one type of invasive animal can affect an entire watershed from the mountains to the sea.

(Note: This description includes multiple levels of cause and effect relationships. Have students create a graphic map that shows the different cause and effect relationships.)

<b>Name and Picture of the Invasive Species</b>	<b>Characteristics That Make it Invasive</b>	<b>Effect on the Rainforest or Rainforest Organisms</b>
<b>Wild Pigs</b>	<b>Uproot native plants</b>	<b>Create deep pockets of soil that collect rainwater</b>

### Cause and Effect Extension

1. Use the phrases below as either cause or effect phrases to complete the chart.
2. Complete a sentence using a signal word(s) to show the cause and effect relationships.

3. **Phrases**

- Roots grow very close together
- Pigs toss and turn the soil
- Uproot native plants
- Mosquitoes breed in standing water
- Uprooted soil flows into streams
- Chokes out any plant in its path
- Smothers coral reefs
- Deep pockets of soil collect rainwater
- Kills marine life

Cause	Effect
Pigs toss and turn the soil with their snouts and uproot native plants.	Pockets of rainwater are created.
1. These four-legged animals aggressively toss and turn the soil with their snouts and uproot native plants. <b>As a result</b> , deep pockets of soil that easily collect rainwater are created.	

Cause	Effect



Cause	Effect

Cause	Effect

Cause	Effect

## Appendix 2.4 Interdependence 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 & 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-sets.

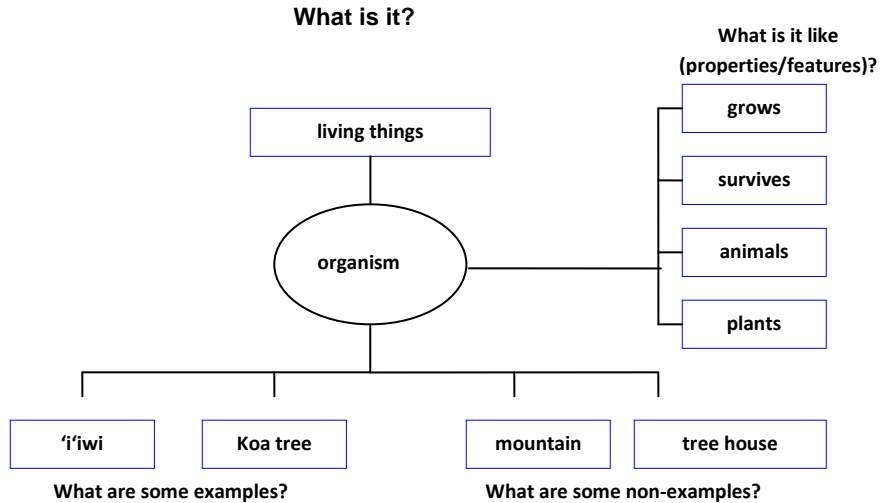
#### Procedure

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

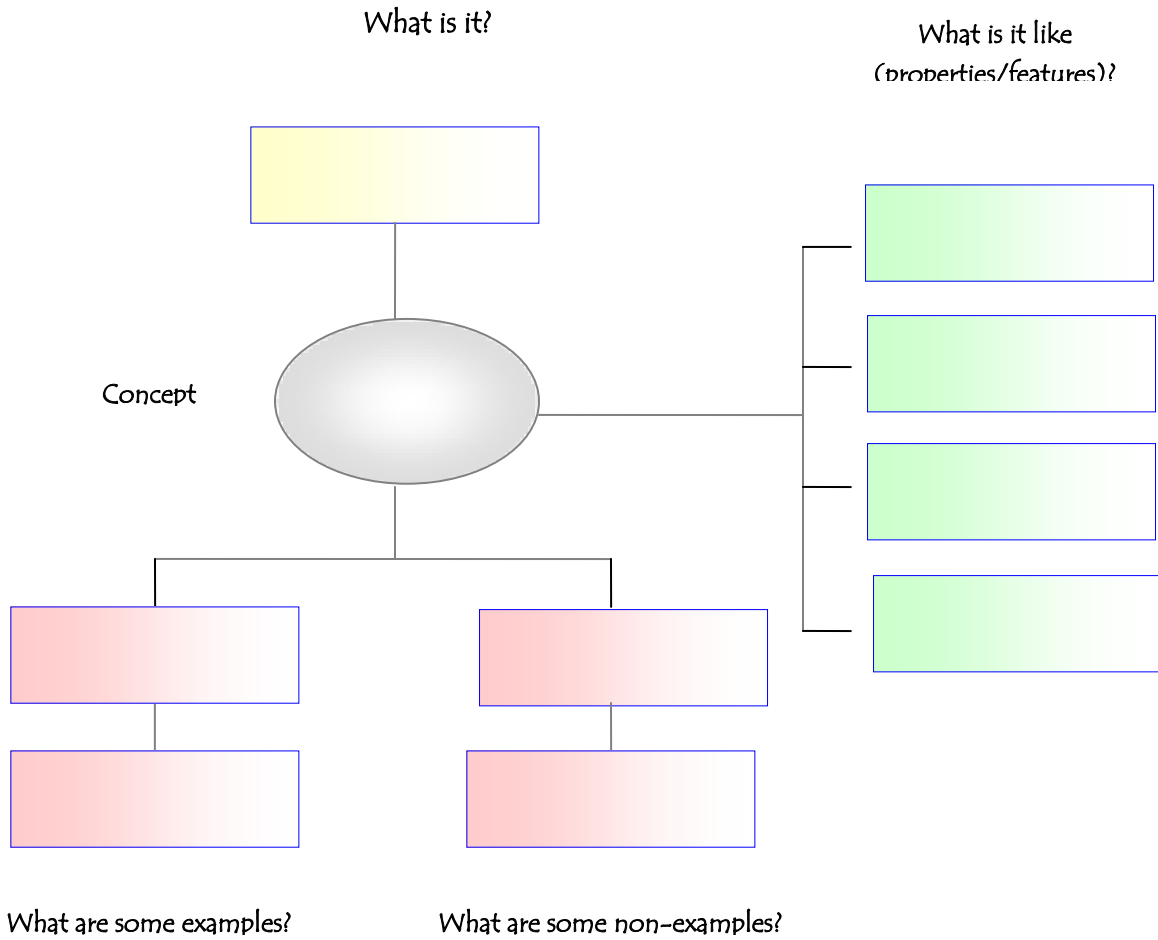
### Book 2 – *Interdependence*

consumer  
decay  
decomposer  
microscopic  
producer  
rainforest  
source

### Book 3 – *Cycle of Matter & the Flow of Energy*

cycle  
food chain  
predator  
prey  
sequence

# Concept of Definition Map



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

# THE MENEHUNE AND THE BIRDS: INTERDEPENDENCE IN HAWAI‘I’S RAINFOREST

## Lesson 3

### Table of Contents

#### Extending Understanding of Interdependence *Practice, Clarify, Internalize, and Demonstrate*

**Driving Question:** *How do interdependent features help humans to survive?*

Learning Engagements	Pages
I. Exploring man’s relationship with the rainforests	39
II. Observing interdependence of urban dwellers	40
III. Defining interdependence in one’s community (See Appendix 3.1: <i>Interdependence Cycle</i> )	40 42
IV. Developing word consciousness with semantic gradients ( See Appendix 3.1: <i>Interdependence Semantic Gradients</i> )	41 44



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

## Lesson 3

*Mālama ika 'āina (Respect the Land)*



The Kamehameha caterpillar depends on the māmakī for its protection. The heads of the caterpillar resemble the cluster of māmakī flowers, a camouflage.

### Lesson Notes

#### I. Exploring Man's Relationship with the Rainforests

##### Concepts/Themes

*Interdependent relationships allow organisms to survive in an environment.*

*Laulima (working together) exists in the forest, at school, at home, and within the community.*

##### Objective

*Students identify relationships that exist with the rainforest today—people, organisms, services, and products.*

##### Length

*45 minutes*

##### Materials

1. *Interdependence in Hawai'i's Rainforest*

### Extending Understanding of Interdependence

*Practice, Clarify, Internalize, and Demonstrate*

**Driving Question:** *How do interdependent features help humans to survive?*

#### I. Exploring Man's Relationship With the Rainforests

In *The Menehune and the Birds* animation video, special relationships exist between humans and the organisms of the rainforest. The bird catchers and the canoe builders depended on the forest, as well as followed practices that the forest organisms depended on from humans.

1. Have students scan through the graphic novel, *The Menehune and the Birds*, and the text-set, *Interdependence in Hawai'i's Rainforest*.
  - a. Locate references to the different interdependent relationships that exist in the rainforest: akua and the rainforest; bird catchers and the rainforest; canoe builders and the rainforest; and organisms with other organisms.

science text-set.

2. Poster paper.
3. Marking pens or colored pencils.

2. Have students take a moment to reflect in their journals on their interdependence with the rainforests. *Do you depend on the rainforest? Do you follow practices that rainforest organisms can depend on for its survival?*
  - a. Today, most people are far removed from the rainforest.
  - b. *How does learning about the interdependence of the organisms in the rainforest bring the forest closer to you?*
3. Share ideas with the class.

### Exploring Products From the Rainforests of Hawai'i

1. With your family look through your home. Make a list of all the products that originated from the Hawaiian rainforest.
2. Select one product you are interested in finding more information about.
3. Find out about:
  - a. *Where is the plant, organism found?*
  - b. *Is it a native plant?*
  - c. *What part of the plant is used?*
  - d. *How is it processed?*
  - e. *Did the early Hawaiian people use these products also?*

Possible examples include: soaps, medicines, furniture, food, food servers, artwork, sanctuary to enjoy, recreational areas, science work, services, etc.

4. Share findings by creating a one-page advertisement about the product, service, work, art, etc.

**Assessment:** Observe that students can identify relationships that include people or organisms and the rainforest; services and the rainforest; recreation and the rainforest; and products and the rainforest.

## II. Observing Interdependence of Urban Dwellers

### Objective

Students capture evidence of interdependent relationships among urban organisms.

### Length

45 minutes

### Materials

1. Digital camera.
2. Journals.

## III. Defining Interdependence in One's Community

### Objective

Students share three interdependent relationships that they are engaged in.

### Length

30 minutes

### Materials

1. *Interdependence in Hawai'i's Rainforest science text-set.*
2. Appendix 3.1: *Interdependence Graphic.*

## II. Observing Interdependence of Urban Dwellers

Ask students to share their observations of the birds, insects, and other organisms that are found in urban environments (towns, businesses, neighborhoods).

1. Select an area of your neighborhood where you can conduct daily observations (park, schoolyard, backyard, etc.).
2. Record or take a photo of the sightings made of urban dwellers (organisms) and evidence of interdependence.
  - a. Birds, butterflies, insects, bugs.
  - b. Observe what the organism eats.
  - c. *Does it depend on other organisms?*
  - d. *How do other organisms depend on the organism you selected?*

## III. Defining Interdependence in One's Community

Have students explore all of the communities or systems they belong to and explore features of interdependence in each.

1. Have students reflect on communities they belong to (family, church, school, team, neighborhood, band etc.).
2. Select one group and brainstorm all the interactions within the community. Identify how the individuals are interdependent.
  - a. Introduce ideas of roles and common goals.
3. Have students show the interdependencies using the Interdependence cycle or create their own graphic organizer. (See Appendix 3.1: *Interdependence Cycle.*)
  - a. Show a minimum of three interdependent interactions.
4. Conduct a discussion. Identify common interdependences and unusual interdependencies.
5. Recall all of the interdependencies explored (akua and the



rainforests; humans and the rainforests; organisms in the rainforests; interdependencies between people).

a. Identify similarities and differences.

6. In their journals, students define interdependence. Select one interdependent example they shared in one of the communities to which they belong to help them define interdependence.

**Assessment:** Review student journal entries on interdependence. *Are students able to identify and explain interdependencies that exist in the example they selected?*

#### IV. Developing Word Consciousness

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

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

##### **Objective**

*Student shows gradient relationships of target vocabulary words.*

##### **Length**

*30 minutes*

##### **Materials**

1. Appendix 3.2: *Interdependence Semantic Gradient.*

#### IV. Developing Word Consciousness With Semantic Gradients

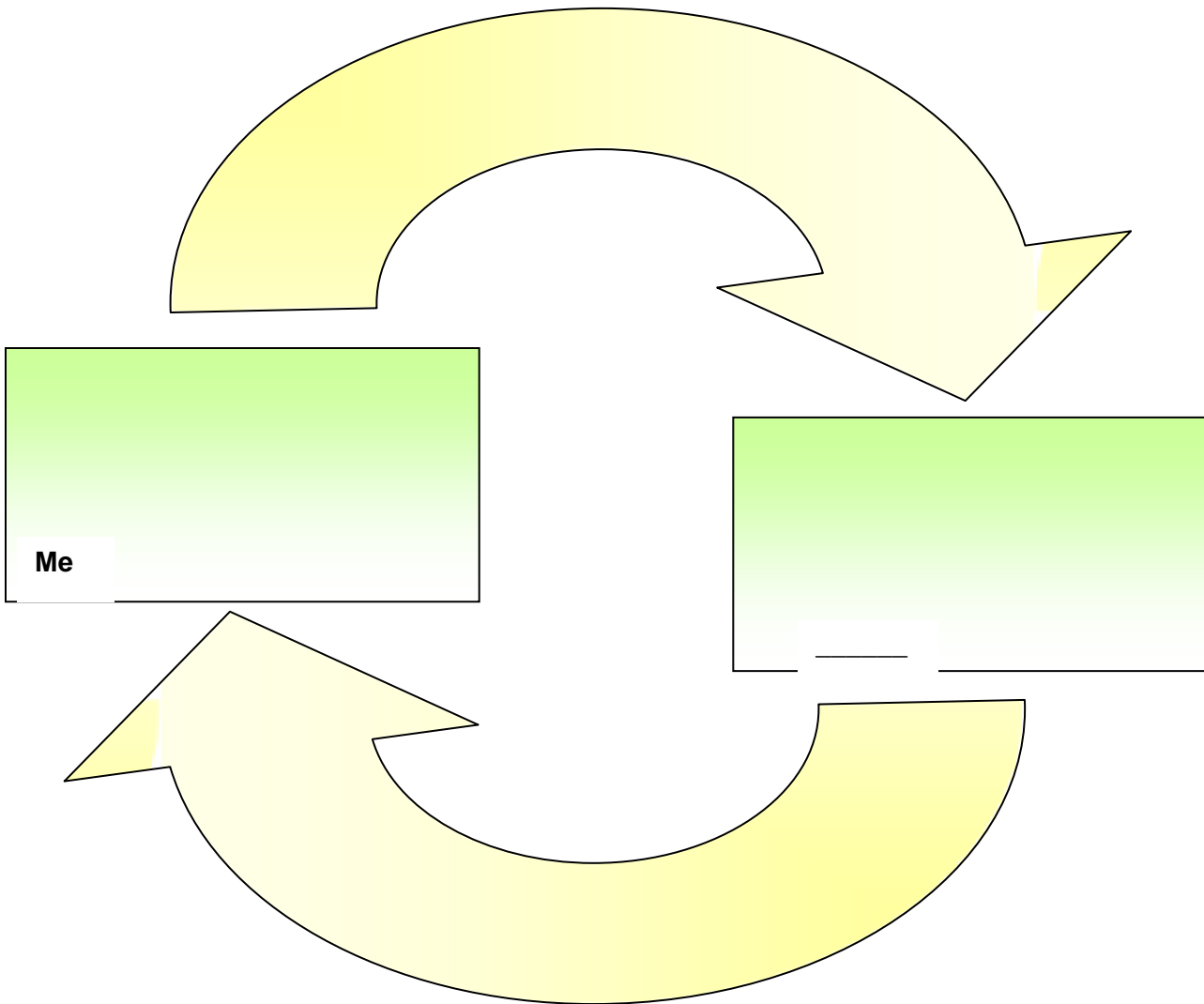
1. Provide opportunities for students to explore *The Menehune and the Birds* vocabulary words to develop their word consciousness.
2. As a class, work on samples together. Developing word consciousness is ongoing throughout the day, not only reserved for specific lessons.
3. Follow the procedures for Appendix 3.2: *Interdependence Semantic Gradient.*

**Assessment:** Students work independently and complete the *Interdependence Semantic Gradient* activity for *The Menehune and the Birds* target words.

**Appendix 3.1: Interdependence Cycle**

**Interdependence**

How are you dependent on \_\_\_\_\_?



How is \_\_\_\_\_ dependent on you?

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

**Explain the Interdependence between the organisms**



## Appendix 3.2: Interdependence Semantic Gradient

### Semantic Gradient

#### Developing Word Consciousness

#### Semantic Gradient

Semantic gradients are sequential arrangements of words placed along a continuum. Semantic gradients help students make connections between known words and new vocabulary. Arranging the words in a gradient allows students to visualize the relationships among the words.

#### Purpose

1. To help students make connections between known and new words.
2. To enhance students' word knowledge by having them determine the shades of meaning of words.

#### Materials

1. Thesaurus.
2. Science text-sets.
3. Dictionary.
4. Semantic Gradient Examples handout.
5. Semantic Gradients handout.

#### Procedure

1. Review synonyms such as *big* and *humongous* with the class, emphasizing the idea of degrees and shades of meaning (e.g., *humongous* is a larger and stronger, more intense word than *big*. *Tiny* refers to something that is smaller than *little*).
  - a. Continue with other pairs (e.g., *difficult* and *stubborn*; *easy* and *simple*; *light* and *airy*; *large* and *massive*).
2. Thinking aloud, work with the class to place the words listed in the Word Bank along the gradient for the two anchor words, *meticulous* and *careless*.
  - a. Discuss the shades of meaning for the words.
  - b. Students may add more words to the gradient, such as *thoughtless*, *reckless*, *particular*, and *cautious*.

Meticulous

Careless

|-----|-----|-----|-----|

**Word Bank:** haphazard, careful, tidy, casual

3. Distribute the Semantics Gradient handout to groups of three to four students.
  - a. Follow up with sharing and justifying the placement of the words.
  - b. Use the words along the continuum in sentences, discussing the shades of meaning with words along the gradient.
  - c. Discuss how words used in one context may not work in others, such as “the *scorching* heat” but not “a *scorching* oven.”

## References

### Extension

1. Have students (in pairs or teams of three to four) create semantic gradients for the characters from *The Menehune and the Birds*, such as 'Elepaio, the Menehune Chief, and Kehau.
  - a. Students can create their own descriptions of characters using the Word Bank words or their own interpretations.
  - b. Example: 'Elepaio (horrified, frightened, brave, courageous, fearless)
  - c. Students share their character gradients and add to one another's gradients.

Blachowicz, C., & Fisher, P. J. (2002). *Teaching vocabulary in all classrooms*. Columbus, OH: Merrill Prentice Hall.

Greenwood, S. C., & Flanigan, K. (2007). Overlapping vocabulary and comprehension: Context clues complement semantic gradients. *The Reading Teacher*, 61, 249–254.

NCTE. read•write•think: Solving Word Meanings: Engaging Strategies for Vocabulary Development. Session 3: Introducing Semantic Gradients. Retrieved May 6, 2008, from [www.readwritethink.org/lessons/lesson\\_view.asp?id=1089](http://www.readwritethink.org/lessons/lesson_view.asp?id=1089)

# Semantic Gradient Examples

---

Meticulous

Careless

|-----|-----|-----|-----|-----|-----|

Word Bank: haphazard, careful, tidy, casual

Depressed

Elated

|-----|-----|-----|-----|-----|-----|

Word Bank: upset, indifferent, glad, happy

Frigid

Scorching

|-----|-----|-----|-----|-----|-----|

Word Bank: warm, hot, cool, cold

Arrogant

humble

|-----|-----|-----|-----|-----|-----|

Word Bank: proud, simple, snob, modest

Name \_\_\_\_\_

Date \_\_\_\_\_

# Semantic Gradient

---

---

Create Semantic Gradients using the following words: **microscopic**, **abundant**, **adequate**, **scarce**, and **definite**

Microscopic

Macroscopic

|-----|-----|-----|-----|-----|-----|

Word Bank: huge, large, small, minute

|-----|-----|-----|-----|-----|-----|

Word Bank:

|-----|-----|-----|-----|-----|-----|

Word Bank:

|-----|-----|-----|-----|-----|-----|

Word Bank:

Name \_\_\_\_\_

Date \_\_\_\_\_

# THE MENEHUNE AND THE BIRDS: INTERDEPENDENCE IN HAWAI'I'S RAINFOREST

## Lesson 4

### Table of Contents

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

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

Learning Engagements	Pages
I. Creating a culminating product to demonstrate understanding of interdependence	49
II. Presenting the culminating product—an authentic school or community-based project. (See Appendix 4.1: <i>Interdependence Project Criteria</i> )	50 52





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

## Lesson 4

*Mālama ika 'āina (Respect the Land)*

### Your Turn!

Each organism in this community has special roles. These roles develop into special relationships among the organisms that help them survive and are important in keeping a well-balanced rainforest.



#### Lesson Notes

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

###### Objective

Students demonstrate their understanding of the concept of Interdependence through their culminating product.

###### Length

Dependent on the scope of the product.

###### Materials

1. Contact information of local agencies.
2. Poster papers.
3. Coloring pens and pencils.
4. Digital camera.

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

*Adapt, Exhibit, and Pose New Questions*

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

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

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. "The Good or the Bad Wanted Posters" on Page 21 of *Interdependence in Hawai'i's Rainforest*.
  - b. An authentic project that surfaces as students explored the interdependency between humans and the rainforest, and answers the question, *Why do we need the rainforests?*
2. Consult a local agency such as the Lyon Arboretum, the Nature Conservancy, the Department of Land and Natural Resources, and the Audubon Society.

- a. Research the most wanted or *treasured* organisms.
  - b. Assist the agency with creating public awareness in keeping a balanced rainforest.
3. Create a Most Wanted poster of an organism that is either a treasure or a threat to Hawai'i's rainforest, or the neighborhood. Include the following on your poster:
  - Name
  - Photo or drawing
  - Common name, Hawaiian name if applicable
  - Brief description
  - Place of origin
  - Why it is a threat, or why it is beneficial for the rainforest
  - Possible ways to fight it and control it. Or, if good, to help it continue to survive.
4. With the students, outline the procedure for completing the task.
  - a. Determine what they already know.
  - b. Determine what questions they need to do 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.
5. Students and the teacher review the criteria before, during, and after the project. Appendix 4.1 *Interdependence* Project Criteria.

## II. Presenting the Culminating Product

Share the posters with community organizations and businesses.

**Assessment:** Review the culminating product with students, using the poster criteria.

### Ongoing Throughout *The Menehune and the Birds* Lessons

1. Generate ideas that serve as building foundations for the culminating story activity for *The Menehune and the Birds*.
  - a. Students and teachers generate ideas throughout the module.

#### Ongoing

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



2. Based on understanding of rainforest adaptations and interdependence, *what ideas would make for interesting stories that could be told and passed down from one generation to the next?* Possible ideas include:
  - a. *Why the Coqui Frog Sings*
  - b. *Return of the Rainforest Birds*
  - c. *The Last Canoe*

## Appendix 4.1: *Interdependence* Culminating Product Criteria Checklist

Project Criteria Checklist		
Criteria	Yes	No
1. Does the project show the effect of interdependence, or threat to interdependence?		
2. Do participants apply interdependent practices in completing the project?		
3. Is the project authentic and relevant to all 4th grade students? Does it have a real audience?		
4. Does the project summary use evidence to explain the relationships of interdependence?		
5. Other—based on student and teacher input.		

# Vocabulary Practice

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

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

### Cloze Sentences

*Select the appropriate word to complete each sentence.*

1. Grass is a \_\_\_\_\_ that many animals depend on for food.
  - a. manager
  - b. reducer
  - c. producer
  - d. inducer
2. An animal that eats a producer is called a \_\_\_\_\_.
  - a. consumer
  - b. commuter
  - c. condenser
  - d. conserver
3. A \_\_\_\_\_ has an important role of keeping the soil rich in nutrients.
  - a. decorator
  - b. decomposer
  - c. decongestant
  - d. deconstruction
4. Germs are so small, they are considered \_\_\_\_\_.
  - a. telescopic
  - b. tropic
  - c. microscopic
  - d. subtopic
5. During the summer on the farm, fresh fruits and vegetables are always \_\_\_\_\_.
  - a. absorbent
  - b. abundant
  - c. accountant
  - d. adamant
6. An indoor plant needs \_\_\_\_\_ sunlight.
  - a. animate
  - b. ultimate
  - c. ornate
  - d. adequate

7. After a while, dead leaves on the ground will begin to \_\_\_\_\_.
- decal
  - decade
  - decor
  - decay
8. Could you \_\_\_\_\_ your shoes if they were mixed up with other shoes?
- Identify
  - idleness
  - idealize
  - idolize
  - e.
9. If chemicals are dumped at the \_\_\_\_\_ of the river, it pollutes the entire river.
- solace
  - solstice
  - source
  - souls
10. Use a sponge to \_\_\_\_\_ the water that spilled on the floor.
- absurd
  - attract
  - absorb
  - absent

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

### Matching Words with Definitions

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

1. an organism that makes its own food
  - a. provider
  - b. promoter
  - c. protector
  - d. producer
  
2. an organism that eats other living things
  - a. consumer
  - b. conformer
  - c. container
  - d. converter
  
3. a small organism, such as fungus, that feeds on and breaks down dead plant or animal matter
  - a. decoder
  - b. decomposer
  - c. decompress
  - d. decoration
  
4. very small; only able to be seen through a microscope
  - a. microwave
  - b. microphone
  - c. microchip
  - d. microscopic
  
5. having large amounts of something; plentiful
  - a. abandoned
  - b. absorb
  - c. abundant
  - d. abstain
  
6. having enough of something
  - a. adamant
  - b. adequate
  - c. adjacent
  - d. adjusted
  
7. to rot
  - a. delay
  - b. deny
  - c. decoy
  - d. decay



8. to recognize someone or something and say who or what it is
- a. identify
  - b. gratify
  - c. justify
  - d. testify
9. a place or thing from which something comes or starts
- a. course
  - b. pours
  - c. source
  - d. courts
10. to soak up; to take something in
- a. superb
  - b. disturb
  - c. absorb
  - d. perturb

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

### Word Antonyms

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

1. dispose is to keep as **microscopic** is to \_\_\_\_\_
  - a. miniature
  - b. small
  - c. huge
  - d. tiny
  
2. adjacent is to distant as **abundant** is to \_\_\_\_\_
  - a. scarce
  - b. plenty
  - c. lots of
  - d. full
  
3. sad is to happy as **adequate** is to \_\_\_\_\_
  - a. sufficient
  - b. ample
  - c. satisfactory
  - d. deficient
  
4. under is to over as **decay** is to \_\_\_\_\_
  - a. fresh
  - b. collapse
  - c. decline
  - d. deteriorate
  
5. rain is to sun as **absorb** is to \_\_\_\_\_
  - a. blot
  - b. digest
  - c. soak
  - d. repel

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

### Semantic Association of Words

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

1. **producer**
  - a. maker
  - b. plants
  - c. river
  - d. stream
2. **consumer**
  - a. organism
  - b. mineral
  - c. boulder
  - d. eats
3. **decomposer**
  - a. construct
  - b. fungus
  - c. rot
  - d. build
4. **microscopic**
  - a. very small
  - b. enormous
  - c. tiny
  - d. huge
5. **abundant**
  - a. lots of
  - b. rare
  - c. scarce
  - d. plentiful
6. **adequate**
  - a. too little
  - b. lacking
  - c. plenty
  - d. enough
7. **decay**
  - a. rot
  - b. grow
  - c. dead
  - d. alive
8. **identify**
  - a. ignore
  - b. recognize
  - c. know
  - d. overlook
9. **source**
  - a. beginning
  - b. cause
  - c. end
  - d. result
10. **absorb**
  - a. firm
  - b. liquid
  - c. solid
  - d. soak

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

### Challenge 1

1. Which of the following is a **producer**?
  - a. earthworm
  - b. bacterium
  - c. tree
  - d. rabbit
2. Which of the following is a **consumer**?
  - a. a whale
  - b. grass
  - c. soil
  - d. water
3. Which of the following is a **decomposer**?
  - a. a horse
  - b. a banana
  - c. a fungus
  - d. a bush
4. Which of the following is **microscopic**?
  - a. bacteria
  - b. telescope
  - c. oven
  - d. grain
5. Where would you expect water to be the LEAST **abundant**?
  - a. a rainforest
  - b. Niagara Falls
  - c. a marsh
  - d. the desert
6. How much water would likely be **adequate** to fill a bathtub?
  - a. 10 cups
  - b. 50 gallons
  - c. 60 teaspoons
  - d. 16 tablespoons
7. Which of the following will probably NOT **decay**?
  - a. an apple core
  - b. an orange peel
  - c. a brick
  - d. a log

8. Which of the following would NOT be a helpful way to **identify** people?
- a. by their voice
  - b. by how they walk
  - c. by their laugh
  - d. by their health
9. A tree is NOT the **source** of \_\_\_\_\_.
- a. an eraser
  - b. paper
  - c. lumber
  - d. pencil
10. Which of the following would NOT be able to **absorb** liquid?
- a. a diaper
  - b. a paper towel
  - c. a glass cup
  - d. a cloth

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

### Vocabulary Challenge 2

1. You know if an organism is a **producer** if it \_\_\_\_\_.
  - a. eats other organisms
  - b. makes its own food
  - c. gets its energy from other plants
  - d. is a fossil fuel
2. You know an organism is a **consumer** if it \_\_\_\_\_.
  - a. is a plant
  - b. makes its own food
  - c. breaks down dead matter
  - d. eats plants and other animals
3. Which of the following is NOT true about **decomposers**? They are \_\_\_\_\_.
  - a. plants and trees
  - b. usually small organisms
  - c. often fungi, bacteria, or earthworms
  - d. an important part of a food chain
4. A **microscopic** organism \_\_\_\_\_.
  - a. uses sound waves to move
  - b. is too large to be seen through a magnifying glass
  - c. is too small to be seen with our eyes
  - d. is a natural resource
5. An example of **abundant** is \_\_\_\_\_.
  - a. to leave something forever
  - b. a large supply of apples
  - c. silly and foolish
  - d. a droplet of water
6. An example of something that is **adequate** is \_\_\_\_\_.
  - a. a house next door
  - b. something that is deep in the ocean
  - c. a waterfall
  - d. having enough cookies for your class
7. If something **decays**, it \_\_\_\_\_.
  - a. turns into waste
  - b. is a trick
  - c. sticks to things
  - d. decorates your room

8. If you are able to **identify** someone, you \_\_\_\_\_.
- a. look exactly like him
  - b. recognize him
  - c. ignore him
  - d. admire him
9. Which of the following would **absorb** liquid well?
- a. a pot
  - b. a large spoon
  - c. a straw
  - d. a towel
10. Which of the following is NOT a **source** of a river?
- a. the ocean
  - b. a lake
  - c. a spring
  - d. a glacier

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

### Vocabulary Answer Sheet

Cloze Sentences	Word Definitions	Word Antonyms	Semantic Associations	Challenge 1	Challenge 2
1. producer	1. producer	1. huge	1. a. maker b. plants	1. c. tree	1. b. makes its own food
2. consumer	2. consumer	2. scarce	2. a. organism d. eats	2. a. whale	2. d. eats plants and other animals
3. decomposer	3. decomposer	3. deficient	3. b. fungus c. rot	3. c. a fungus	3. a. plants and trees
4. microscopic	4. microscopic	4. fresh	4. a. very small c. tiny	4. a. bacteria	4. c. is too small to be seen with our eyes
5. abundant	5. abundant	5. repel	5. a. lots of d. plentiful	5. d. desert	5. b. a large supply of apples
6. adequate	6. adequate		6. c. plenty d. enough	6. b 50 gallons	6. d. having enough cookies for your class
7. decay	7. decay		7. a. rot c. dead	7. c. a brick	7. a. turns into waste
8. identify	8. identify		8. b. recognize c. know	8. d. by their health	8. b. recognize him
9. source	9. source		9. a beginning b. cause	9. a. an eraser	9. d. a towel
10. absorb	10. absorb		10. b. liquid d. soak	10. c. a glass cup	10. a. the ocean