



Frameworks for Success in Science – MSP Grant

WORKING DRAFT COHORT I & II

Ha‘aheo, Hilo Union, Kalaniana‘ole, and Ka‘ūmana Elementary Schools

Content Area: Interdisciplinary/Science

Grade Level: 2

<i>Timeline -></i>	<u><i>Semester One</i></u>
<p><i>Guiding Questions</i></p>	<p><u><i>Science:</i></u></p> <p>What are the steps of the scientific method? What are vertebrates? Invertebrates? Plants? What characteristics/attributes do we use to classify living things? What are the major differences between vertebrates and invertebrates? What are the stages of the life cycles of insects? What is metamorphosis? What are native species? What species have been introduced? What are endangered species? What are the different habitats? What are ecosystems?</p> <p><u><i>Language Arts:</i></u></p> <p>What can we learn about plants and animals by reading? How can we write to show the steps we have used in the scientific method? How can adjectives help our written science descriptions? How can we edit and improve our writing using a provided checklist?</p> <p><u><i>Math:</i></u></p> <p>How can Venn diagrams help sort items that are the same or different? How is a bar graph drawn to show totals with provided data? What conclusions can we draw from the data portrayed by the graph? How can we use addition, subtraction and grouping (multiplication) to solve problems? How are ratios used to solve problems? What are different types of repeating and growing patterns?</p> <p><u><i>Social Studies:</i></u></p> <p>How can we use information to solve a societal problem? How do we balance the needs of humans with the effects on the environment?</p> <p><u><i>Art:</i></u></p> <p>How can we draw/illustrate and label sketches for a scientific journal? How can we create 3-D models to showcase our ecosystems and habitats?</p>



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<p>General Learner Outcomes</p>	<p><u>GLO#1: Self-Directed Learner:</u> Students will create</p> <p><u>GLO#2: Community Contributor:</u> Students will share their habitats and ecosystems booklets with students in lower grade levels.</p> <p><u>GLO#3: Complex Thinker:</u> Students will use their problem solving, math and writing skills to investigate populations of animals in various ecosystems and habitats.</p> <p><u>GLO#4: Quality Producer:</u> Students will create a final product (poster/diorama) that illustrates the classification systems for animals and plants, as well as assigned habitats and ecosystems. Students will create math products (graphs, data tables, charts) that enhance posters and diorama.</p> <p><u>GLO#5: Effective Communicator:</u> Students will listen, discuss and record information from their different lessons through oral, written and math pieces that illustrate concepts they have learned about the plants, animals, habitats and ecosystems. Students will orally share with younger students their final products.</p>
<p>Assessments</p>	<p>Constructed response (math, language arts, science) that is based on the unit ideas and concepts Safari Story pp. 30-31 (from AIMS Exploring Environments) or Pack Their Backpack (lesson with written response from AIMS lesson).</p> <p>A summative product rubric will be used to assess the final science poster/diorama that each student produces.</p> <p>The rubric criteria will include assessment of the presentation of concepts learned, as well as the written and drawn presentation quality.</p> <p>Oral communication of final project – can also use “Pack Your Backpack” or “Safari Story” lesson product.</p>



Content Area Standards and Benchmarks

Content Area: Science	FINAL
Grade / Course: 2	Quarter: 1
<p>The Benchmark Map is developed with the following premises:</p> <ul style="list-style-type: none"> • All benchmarks for the grade level/course will be achieved in a school year. • Major understandings are the big generalizations for the topic/concept. ◊ <i>Italicized benchmarks are taught and assessed in more than one quarter.</i> 	
<p>Big Idea(s) / Major Understanding(s): <i>Students will understand that...</i> Organisms go through different stages in their lives: they are born, they grow, they develop into adults, and they reproduce.</p> <p>Different kinds of animals have different kinds of life cycles.</p> <p>Technologies such as computers, magnifiers, digital equipment, microscopes have enhanced our understanding of organisms.</p>	
<p>HCPS III Benchmarks:</p> <ul style="list-style-type: none"> ◊ 2.1.1 Scientific Inquiry <i>Develop predictions based on observations</i> ◊ 2.1.2 Scientific Inquiry <i>Conduct a simple investigation using a systematic process safely to test a prediction</i> ◊ 2.2.1 Unifying Concepts and Themes <i>Describe changes that have occurred in society as a result of new technologies</i> • 2.4.1 Classification Explain how plants and animals go through life cycles 	
Grade / Course: 2	Quarter: 2
<p>Big Idea(s) / Major Understanding(s): <i>Students will understand that...</i> Different habitats support different organisms.</p> <p>Habitats are part of an ecosystem.</p> <p>Animals depend on plants and other animals as part of a process called a <u>food chain.</u> Food chains combine to form food.</p>	
<p>HCPS III Benchmarks:</p> <ul style="list-style-type: none"> ◊ 2.1.1 Scientific Inquiry <i>Develop predictions based on observations</i> ◊ 2.2.1 Unifying Concepts and Themes <i>Describe changes that have occurred in society as a result of new technologies</i> • 2.3.1 Interdependence Describe how animals depend on plants and animals • 2.5.1 Unity and Diversity Identify distinct environments and the different kinds of organisms each environment supports 	



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Sample Performance Rubrics - Science

Strand		The Scientific Process	
Topic	Scientific Inquiry		
Benchmark SC.2.1.1	Develop predictions based on observations		
Sample Performance Assessment (SPA)	The student: Makes predictions based on observations about the world around him or her.		
Rubric			
Advanced	Proficient	Partially Proficient	Novice
Make logical predictions based on justified inferences from observations	Make predictions based on observations	With assistance, make predictions partially based on observations	Make inaccurate predictions or make predictions not based on observations
Benchmark SC.2.1.2	Conduct a simple investigation using a systematic process safely to test a prediction		
Sample Performance Assessment (SPA)	The student: Implements a simple procedure safely to answer a question or test a prediction that relies on careful observations (e.g., collects, records, and organizes data).		
Rubric			
Advanced	Proficient	Partially Proficient	Novice
Consistently conduct a simple investigation using a systematic process safely to provide a valid test of a prediction	Usually conduct a simple investigation using a systematic process safely to provide a test of a prediction	Sometimes conduct a simple investigation using a systematic process safely to provide a test of a prediction	Rarely conduct a simple investigation using a systematic process safely to provide a test of a prediction
Topic	Unifying Concepts and Themes		
Benchmark SC.2.2.1	Describe changes that have occurred in society as a result of new technologies		
Sample Performance Assessment (SPA)	The student: Describes the ways society has changed as a result of technology (e.g., the use of the wheel, motor, and electricity).		
Rubric			
Advanced	Proficient	Partially Proficient	Novice
Explain the changes that have occurred in society as a result of new technologies, and describe what is common among these changes	Describe a variety of changes that have occurred in society as a result of new technologies	Provide a few examples of changes that have occurred in society as a result of new technologies	Recognize changes that have occurred in society as a result of new technologies
Topic	Interdependence		
Benchmark SC.2.3.1	Describe how animals depend on plants and animals		
Sample Performance Assessment (SPA)	The student: Describes how different animals use plants and animals (e.g., for food, for building nests).		
Rubric			
Advanced	Proficient	Partially Proficient	Novice
Classify animals based on their dependence on plants and animals	Describe how animals depend on plants and animals	Describe a few of the ways animals depend on plants and animals	Recall that animals depend on plants and animals
Topic	Classification		
Benchmark SC.2.4.1	Explain how plants and animals go through life cycles		
Sample Performance Assessment (SPA)	The student: Illustrates the stages of the life cycles (e.g., germination/birth, growth, reproduction, and death) of various plants and animals, pointing out some details that distinguish each stage.		



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Rubric			
Advanced	Proficient	Partially Proficient	Novice
Classify plants and animals by the details of their life cycles	Explain how plants and animals go through life cycles	Give an example of a plant life cycle and an animal life cycle	Recall that plants and animals go through life cycles

Topic	Unity and Diversity
Benchmark SC.2.5.1	Identify distinct environments and the different kinds of organisms each environment supports
Sample Performance Assessment (SPA)	The student: Names different environments (e.g., mountain, rainforest, ocean) and lists different kinds of plants and animals that live there.

Rubric			
Advanced	Proficient	Partially Proficient	Novice
Compare and contrast the distinct environments and the different kinds of organisms they support	Identify several distinct environments and the different kinds of organisms each environment supports	Identify a distinct environment and a few of the organisms that the environment supports	Recall that different environments support different kinds of organisms

Topic	Discussion and Presentation
Benchmark LA.2.6.1	Use oral language to obtain information, complete a task, and share ideas with others
Sample Performance Assessment (SPA)	The student: Interacts with others for several purposes (e.g., sharing information and ideas with a partner when completing a task, assisting others with their assignments by providing information or giving suggestions, answering a question to clarify a procedure, participating in small groups to solve a simple problem).

Rubric			
Advanced	Proficient	Partially Proficient	Novice
Use creative oral language to obtain information, complete a task, and share ideas with others, in a highly effective way	Use oral language to obtain information, complete a task, and share ideas with others	Use oral language that sometimes aids in obtaining information, completing a task, or sharing ideas with others	Use inappropriate oral language that does not aid in obtaining information, completing a task, or sharing ideas with others

Benchmark LA.2.6.2	Give an oral presentation to share information with peers
Sample Performance Assessment (SPA)	The student: Gives a simple oral presentation (e.g., participates in "share-and-tell" about a personal experience, shares information from content area learning).

Rubric			
Advanced	Proficient	Partially Proficient	Novice
Give a creative, highly effective oral presentation to share information with peers	Give an oral presentation to share information with peers	Give an oral presentation that shares limited information with peers	Give an oral presentation that does not share information with peers



Lessons Standards Summary

Resource	Lesson Title	What students will be able to know, do and understand
Classification and Life Cycles of Plants & Animals		
Harcourt Text	Chapter 1: Living and Nonliving Things REVIEW AS NEEDED	Vocabulary Power “Living and Nonliving Things” & Lesson 1: Living and Nonliving Things – REVIEW – focus on living, once living, never lived... Lesson 2: What do animals need? RS 7-8 Lesson 3: What do plants need? RS 9-10
Harcourt Text	Plants – Chapter 3 REVIEW as needed	1) Vocabulary Power 2) Lesson Quick Study - Lesson 1: What are the parts of a plant? RS19-20
AIMS	Inside a Seed GOOD INQUIRY LESSON	Great place to use the science notebook – have class copy “key question” and then after a discussion at the end of the lesson, use the Connected Learning questions for students to debrief/discuss and eventually answer on their own in their notebooks
Harcourt Text	Plants REVIEW as needed	Lesson 2: How Do Plants Differ?
Harcourt Text	Plants REVIEW as needed	Lesson 3: What are Some Plant Life Cycles?
Harcourt Text	Animals Chapter 2	Chapter assessment will be read for both the pre/post tests (20 points)
Harcourt Text	Animals	Vocabulary Power Lesson 1: What are Mammals and Birds? Lesson Quick Study RS12-13 Transparency IS 7 “Compare”
Harcourt Text	Animals	Lesson 2: What are Reptiles, Amphibians, and Fish? Lesson Quick Study RS14-15 Transparency IS 8 “Classify” + Graphic Organizer
Harcourt Text	Animals	Lab Manual – LM 31-32 “Classify Animals” Cards 1-13 are for this activity – the rest of the cards, which show newborn and adult are used later. Use the fill-in chart from Gail after the activity – can also use the text and readings to



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		help fill in the chart. You could use the “Circle Sort” instead if you need a simpler version of the activity
Lesson 2	Animal Classification POSTER	Poster by student that includes the 5 types of animals. Student adds in 2 facts per category (index cards with lines and then draw a picture of the animal and label.
Lesson 2:	Animal Classification Poster	Students can use the different readings/puzzles etc. help develop their animal classification poster. Can also use the above index cards to complete the poster as well.
Harcourt Text	Chapter Two: Life Cycles	“Sequence” writing example then have students use the reading from the chapter (assign a part) and have them write their own life cycle sequence paragraph
Harcourt Text	Chapter Two: Life Cycles	Lesson 3: Use the various Animal Cycles pp. 72-79 in the text. Suggest that you use the FROG LIFE CYCLE example to then have students create the other cycles. Graphic Organizer “A life cycle of a ...(animal) IDEA – give each student either the frog, chicken, grasshopper or butterfly pages. Have them create their life cycle and then they can share their animal with the other two people in their group.
Harcourt Text	Chapter Three: Life Cycles REVIEW as needed	Lesson 3: Plant Cycles pp. 100-107 Have students create a pictorial /graphic organizer regarding the plant cycle
AIMS	Cycles of Knowing and Growing: p.11 Social Studies	Tell Me When Your Birthday Comes (timeline)
AIMS	Option 1	Pasta, Pie Graphs, and Painted Ladies (making a model to better understand the life cycle of a Painted Lady butterfly)
AIMS	Option 2	A Time of Their Own SONG (life cycles of moths and butterflies)
AIMS	Option 3	Silkworms (life cycle of silkworms)
Resource	Gail Gibbons	Search “author study” Monarch Butterfly
Harcourt Text	Animals Chapter 2	Chapter assessment will be read for both the pre/post tests (20 points)



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Environments - Habitats

Harcourt Text	Living Things in Their Environments	Chapter 4 Assessment (pre/post)
AIMS		Earth’s Environments rubber band book
Harcourt Text	Lesson 1	Vocabulary Power – Living things in their environments Lesson 1 – What is an environment? RS27-28
AIMS	Option 1	Where Can Animals Live? (animals and living environments sort)
AIMS	Option 2	My Habitats Booklet (pop-up type booklet)
	Option 3	Habitats worksheets
Harcourt Text	Lesson 2	Lesson 2 – How Do Living Things Survive in Different Places? RS 29-30
Harcourt Text	Lesson 3	What are Food Chains and Food Webs? Write to Describe – Writing Practice Use the FOREST or TREES booklets to augment the examples for the students writing practice
AIMS		Voracious Eaters
AIMS		CHAIN GAMES
Optional	Food Chain posters Or model ART MATH (using the vocabulary of 3-d shapes)	Mobile – 3-D (circle, square, triangle) shape. Use craft foam. Draw large shape on foam. Cut out shape inside following the edge – make sure there is 1” between edges. When done cutting, the shape will open up like a mobile. Use the handout with the SUN and levels first, then Attach PLANTS in the center at the top. Add herbivores and carnivores to the edges below the plants. Who eats who goes around the outside.
Optional	FOOD CHAIN MYSTERY	Video/DVD: show video then go back to mobiles/poster and add SUN and arrows for energy source... Use Harcourt text p. 140 as an example
Scholastic	My Book About...	Using Animals & Habitats (Scholastic) mini-books, assign students in each group different habitats to “research” and then share with the class
	Vocabulary Practice	Using the three templates with the vocabulary and have students draw a picture and write about the environment using the vocabulary in the word bank.
AIMS	We Need Each Other	Read story together with props for students. Answer connected learning questions together at the end.
	Animal Info Report	Shari’s lesson plan
Harcourt Text	Living Things in Their Environments	Chapter Assessment (pre/post)



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OPTIONAL	Terrarium – Model of a Habitat	Dwarf mondo grass, lettuce container with lid, GAIL will provide materials list Written daily observations and conclusions
RESOURCES		
BOOKS	www.capstonepress.com http://www.facthound.com BOOK ID# 0736821023 (rainforest) pond #0736821015 forest #0736820981 wetland #073682104X polar #0736821007 desert #0736820973 ocean #073682099X stream #076821031 Click on “Fetch it”	
BOOK	Living Sunlight: How Plants Bring the Earth to Life By Molly Band & Penny Chisholm Blue Sky Press (Scholastic), NY	
Book series-TIME	In theforest, desert, rainforest, etc.	
BOOKS	WHAT IS A HABITAT? Scholastic ISBN #978-0-516-25349-7 Habits series	
SCHOOL VIDEOS.COM	HABITATS – Homes for Living Things FOOD CHAIN MYSTERY	
Scholastic	Deep in the Swamp Donna M. Bateman	
Newbridge First Reports	Series of 8 books ISBN 0-7565-0944-0	
Website	www.blueplanetbiomes.org map of biomes, students color in their own biomes and then find the patterns, write about their ideas	
Website	Google “science organizers” Thinkquest.org	



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Assessment Ideas:

1. Venn diagram – compare & contrast at least 2 habitats (AIMS)

Name of Biome	Animals that live here	Plants that live here
Swamp		

2. Constructed response: Describe a biome (give the specifics)
 Student Fact/Journal Sheet (during oral presentations have students take notes)
 Enchantedlearning.com
3. Have them draw a simple food chain in each of the environments using the animals & plants they have chosen.
4. Have students use Pack Your Backpack or Safari Story written lesson to have students present their poster/diorama.
5. KWL – words that I KNOW, words that I WANT to learn, words that I LEARNED...
6. Using science journal/notebook:
- a) TAB the new science section
 - b) Label the first page **TABLE OF CONTENTS**

Date	Title	Page #
2/9/09	Words I learned today	1
2/11/09	Habitats	2
 - c) Make a large poster paper to model the Table of Contents – build the list as you add in items with the students as you go.

“clear & foggy” (eyeglasses icon and foggy cloud)