



Timeline ->	<u>Quarter One (12 lessons)</u>
Guiding Questions	<p><u>Science:</u> What are the four spheres of the earth? What are the characteristics of living things? How are living things classified? How are plants and fungi classified? How are animals classified? How do living things of the past compare with those of today?</p> <p><u>Language Arts:</u> What can we learn about the earth's spheres, living things and creatures from the past by reading? How can we write to show the steps we have used in the scientific method from our class experiments and activities? How can adjectives help our written science descriptions?</p> <p><u>Math:</u> 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 mathematics processes to solve problems?</p> <p><u>Social Studies:</u> How can we use information to solve a societal problem?</p> <p><u>Art:</u> How can we draw/illustrate and label sketches for a science notebook? How can we create booklets to showcase the spheres of the earth, as well as the family albums that compare creatures from today and the past?</p>
General Learner Outcomes	<p><u>GLO#1: Self-Directed Learner:</u> Students will create a variety of products and classwork assignments that show what they have learned about the earth's spheres, classifying living things and fossils from the past.</p> <p><u>GLO#2: Community Contributor:</u> Students will share their spheres booklets, family albums and other class activities.</p> <p><u>GLO#3: Complex Thinker:</u> Students will use their problem solving, math and writing skills to investigate the similarities and differences of living things and fossils from the past.</p> <p><u>GLO#4: Quality Producer:</u> Students will create a final products (poster/diorama/model) that illustrate the different spheres of the earth and fossils.</p>



	<p>Students will create math products (graphs, data tables, charts) that enhance posters and diorama.</p> <p><u>GLO#5: Effective Communicator:</u></p> <p>Students will listen, discuss and record information from their different lessons through oral, written and math pieces that illustrate concepts they have learned about.</p> <p>Students will orally share with younger students their final products.</p>
Assessments	<p>Formative and summative textbook assessments.</p> <p>Constructed response (math, language arts, science) that is based on the unit ideas and concepts</p> <p>A summative product rubric will be used to assess the final science poster/diorama/model 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</p>

Big Idea(s) / Major Understanding(s): *Students will understand that..*

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

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

The study of fossils helps to understand the evolution of organisms.

Standards and Benchmarks

- ◇ 4.1.1 **Scientific Inquiry**
Describe a testable hypothesis and an experimental procedure
- ◇ 4.1.2 **Scientific Knowledge**
Differentiate between an observation and an inference
- 4.4.1 **Cells, Tissues, Organs, and Organ Systems**
Identify the basic differences between plant cells and animal cells
- 4.5.1 **Biological Evolution**
Compare fossils and living things



Frameworks for Success in Science – MSP Grant 2011-2012

WORKING DRAFT COHORT I & II

Kaumana, Kapiolani, Kalaniana'ole, EB DeSilva, Hilo Union and Ha'aheo Elementary Schools

Content Area: Interdisciplinary/Science

Grade Level: 4th Grade

Sample Performance Rubrics

Topic	Scientific Inquiry		
Benchmark SC.4.1.1	Describe a testable hypothesis and an experimental procedure		
Sample Performance Assessment (SPA)	The student: Describes a testable hypothesis (e.g., if, then, because statement) and an experimental procedure to test it.		
Rubric			
Advanced	Proficient	Partially Proficient	Novice
Create a testable hypothesis and an experimental procedure to test it	Describe a testable hypothesis and an experimental procedure	Identify, with assistance, a testable hypothesis and an experimental procedure	Recognize, with assistance, a testable hypothesis or an experimental procedure
Topic	Scientific Knowledge		
Benchmark SC.4.1.2	Differentiate between an observation and an inference		
Sample Performance Assessment (SPA)	The student: Observes an object or situation and makes an inference from the observation, describing how they differ		
Advanced	Proficient	Partially Proficient	Novice
Explain the difference between an observation and an inference and give examples	Differentiate between an observation and an inference	Provide examples of observations and inferences	Define an observation and an inference
Topic	Biological Evolution		
Benchmark SC.4.5.1	Compare fossils and living things		
Sample Performance Assessment (SPA)	The student: Compares fossil evidence and living things to identify similarities and differences.		
Advanced	Proficient	Partially Proficient	Novice
Compare, and use evidence to explain, the relationship between fossils and living things	Compare fossils and living things, describing their similarities and differences	Identify the connection between fossils and living things	Recall that there is a connection between fossils and living things
Topic	Cells, Tissues, Organs, and Organ Systems		
Benchmark SC.4.4.1	Identify the basic differences between plant cells and animal cells		
Sample Performance Assessment (SPA)	The student: Names the basic differences between plant and animal cells (e.g., plant cells have a cell membrane and a cell wall, chloroplasts; animal cells have a cell membrane).		
Rubric			
Advanced	Proficient	Partially Proficient	Novice
Explain and give examples of the differences between plant and animal cells	Identify the basic differences between plant cells and animal cells	Recognize very few differences between plant and animal cells	Recall, with assistance, very few differences between plant and animal cells



Lessons Summary

Lesson Day #	Lesson Title	What students will be able to know, do & understand
	Getting Ready for Science	Cereal challenge (Dorothy) Create the icon chart of the scientific method
Project 3-D VIEW	INTRODUCTION	Introduction to the "spheres of the earth" Lesson 1 – Spheres of the Earth <ul style="list-style-type: none"> overview of the spheres of the earth
Project 3-D VIEW	BIOSPHERE	Lesson 1 "Alive" **do the duco and move on...** <ul style="list-style-type: none"> chart of characteristics that makes things living versus non-living teacher demo/student observation of the duco cement creature
Harcourt Text	Assessment	PRE-TEST Chapter One
Chapter 1 "Classifying Living Things" Harcourt Textbook and resources		
Project 3-D VIEW	Lesson 2 – Cells Support the Functions of Life	<ul style="list-style-type: none"> compare and contrast simple and complex cells compare and contrast plant and animal cells http://www.HSPscience.com Animated cells http://www.harcourtschool.com/activity/science_up_close/510/dep/ploy/interface.html
Harcourt Text	Lesson 1 Approx 45 min.	How Are Living Things Classified? pp 34-35 Optional - Reading Skill "Mini-Lesson" USING CONTEXT CLUES & GRAPHIC ORGANIZER (bellwork "do now")
Harcourt Text	Lesson 1 (text) Or AIMS	Making a Model Cell LM 26-28 and/OR AIMS "Cell Mates" lesson – can have students copy the question and goal for the lesson into their notebook. Once students complete the activity, then they can answer the connected learning questions in their notebook.
Project 3-D	Lesson 3	– DNA & Body Structures: Evidence for the Tree of Life <ul style="list-style-type: none"> explore the structure of DNA compare DNA sequences of different organisms (monsters then the human/whale/shark on the student pgs)
Harcourt Text	Lesson 2 How are Plants and Fungi Classified?	Reading Skill Mini-Lesson (RS 5) MAIN IDEAS AND DETAILS Lesson Quick Study – RS7-8 **use celery and colored water and set up to observe over time** (Optional - Tracie) Could use the scientific method chart as a way to record the steps taken to observe the changes in the celery (Optional - Robin) Make a booklet "How Does Bread Rise"



Frameworks for Success in Science – MSP Grant 2011-2012

WORKING DRAFT COHORT I & II

Kaumana, Kapiolani, Kalaniana'ole, EB DeSilva, Hilo Union and Ha'aheo Elementary Schools

Content Area: Interdisciplinary/Science

Grade Level: 4th Grade

Harcourt Text	Lesson 3 How Are Animals Classified?	Reading Skill Mini-Lesson (RS 6) USE CHARTS AND GRAPHICS Lesson Quick Study – RS 9-10 Optional - Supporting Structures: Lab – “Backbones”
Harcourt Text		POST-TEST Chapter 1
Harcourt Text	Chapter 3	PRE-test How Do Animals Compare to Animals Today?
	Fossils Reading	<ul style="list-style-type: none"> • Read “Dinosaur Cousins” Bernard Most “Fossils Tell of Long Ago” Aliko
Project 3-D VIEW	Lesson 4	– Life in the Past: Fossils <ul style="list-style-type: none"> • fossil formation (3-D animation) • The case of the “croco-fish (optional) • Comic strip of the formation of a fossil OR
AIMS	Family Albums	Use the “goal & key question” note** lots of coloring and writing
Harcourt Text	Chapter 3 Lesson 3	Read p. 114 together – focus on fossil footsteps and the comparison of the triceratops and the rhino Embed the following vocabulary: prehistoric/modern, extinct How Do Living Things of the Past Compare to Living things of Today – RS 23-24
Harcourt Text	Chapter 3	POST-test How Do Animals Compare to Animals Today?

Resources:

<http://www.Kidshealth.org>(how energy enters the cells of the body)

<http://www.Discoveryeducation.com> (lots of fossils) - go to the glossary tab and there is an animation for fossils timeline

<http://library.thinkquest.org/I001402F/> (scientific method process skills)