



<p>Timeline -></p>	<p><u>Quarter Two (12 lessons)</u></p>
<p>Guiding Questions</p>	<p><u>Science:</u> What can we learn about simple machines? How can you use science process skills to solve a problem?</p> <p><u>Language Arts:</u> What can we learn about the different types of simple machines by reading and writing? How can we write to show the steps we have used in the scientific method? How can adjectives help our written science descriptions?</p> <p><u>Math:</u> How can charts help sort items that are 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 the information about the invention of simple machines through time?</p> <p><u>Art:</u> How can we draw/illustrate and label sketches for a science notebook? How can we create 3-D models to showcase models of simple machines?</p>
<p>General Learner Outcomes</p>	<p><u>GLO#1: Self-Directed Learner:</u> Students will develop a variety of resources connected to their learning about simple machines.</p> <p><u>GLO#2: Community Contributor:</u> Students will share simple machine inventions with their peers.</p> <p><u>GLO#3: Complex Thinker:</u> Students will use their problem solving, math and writing skills to investigate ecosystems and adaptations of plants and animals.</p> <p><u>GLO#4: Quality Producer:</u> Students will create a final product (poster/diorama/model). 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</p>



Frameworks for Success in Science – MSP Grant

WORKING DRAFT COHORT I & II

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

Content Area: Interdisciplinary/Science

Grade Level: 3rd

Assessments	<p>Formative and summative textbook assessments –</p> <p>Constructed response based on the unit ideas and concepts “Thing-a-Mbob”</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>
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Topic	Scientific Inquiry		
Benchmark SC.3.1.1	Pose a question and develop a hypothesis based on observations		
Sample Performance Assessment (SPA)	The student: Brainstorms different types of questions and develops a question and hypothesis based on observations.		
Advanced	Proficient	Partially Proficient	Novice
Pose a question and develop a hypothesis based on logical inferences and observations	Pose a question and develop a hypothesis based on observations	Pose a question or develop a hypothesis partially based on observations	With assistance, pose a question or develop a hypothesis
Benchmark SC.3.1.2	Safely collect and analyze data to answer a question		
Sample Performance Assessment (SPA)	The student: Safely collects and organizes data using tables, charts, and/or graphs to explain what happens in an experiment.		
Advanced	Proficient	Partially Proficient	Novice
Summarize and share analysis of data collected safely to answer a question	Safely collect and analyze data to answer a question	With assistance, safely collect and analyze data	With assistance, safely collect data and attempt to analyze data
Topic	Science, Technology, and Society		
Benchmark SC.3.2.1	Describe ways technologies in fields such as agriculture, information, manufacturing, or communication have influenced society		
Sample Performance Assessment (SPA)	The student: Describes different types of farming technologies, information technologies, manufacturing technologies, or communication technologies and describes how they affected people in the community.		
Advanced	Proficient	Partially Proficient	Novice
Compare how technologies in various fields have influenced society	Describe ways technologies in fields such as agriculture, information, manufacturing, or communication have influenced society	Identify, with assistance, ways that technologies have influenced society	Recall that technologies have influenced society
Topic	Forces and Motion		
Benchmark SC.3.7.1	Compare how simple machines do work to make life easier		
Sample Performance Assessment (SPA)	The student: Compares how simple machines (e.g., wedge, pulley, screw) use forces (pushes and pulls) to do work.		
Advanced	Proficient	Partially Proficient	Novice
Classify how different machines do work to make life easier and justify the classification	Compare how simple machines do work to make life easier	Describe, with assistance, how simple machines do work to make life easier	Name a few simple machines that do work to make life easier



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Lessons Summary

Lesson Day #	Lesson Title	What students will be able to know, do & understand
Chapter Fifteen – Harcourt Text		
TEXTBOOK	Chapter 15 – Lesson 1	What is Motion? Pp. 496-503 Lesson Quick Study RS 112-113 Experiment with extension “MAKE IT MOVE” p.497 (text)
TEXTBOOK	Chapter 15 – Lesson 2 (optional)	What are Forces? Pp. 504-511 Lesson Quick Study RS 114-115 “Instalab” on surface tension (p. 507) Google “Surface Tension ZOOM (the PBS show) Cup filled with water, cover with paper and turn upside down
	Chapter 15 Lesson 3 – Lab	How Do Waves Move? Pp. 512-517 Lesson Quick Study RS 116-117 “Inclined to Help” – explore “friction” and measuring Reinforce the definition of gravity Use a bathroom scale to have students predict their weight, have them weigh themselves – make a graph with prediction and then actual. Use as a math subtraction problem. Vocabulary Power (use as a review prior to pretest below)
	Pretest	Use the Harcourt “revised” pretest on simple machines Bobsled Races is an OPTIONAL post-assessments
	Chapter 16 Lesson 1	What is Work pp. 526-533 - Lesson Quick Study RS 119-120 “Work with Me” experiment on p. 527 (graph paper, straw and checker)
	Chapter 16 Lesson 2	What are Some Simple Machines? Pp. 534-543 Lesson Quick Study RS 121-122
AIMS	Simple Machines	Rubber Band booklets – have students write “notes” in their science notebook consider having students take home for homework and answer some of the questions
	Using Simple Tools	“Scissors vs. hands” (cutting out the happy face) “Scissors vs. rulers” (cutting out the triangles) Then do the LAB “Help from Simple Machines” p. 535 (brown & white rice w/forceps); Consider using hole punch holes instead of rice



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	A First Class Job	Use this to demonstrate how a lever helps lift a heavy load
	Lever and Fulcrum OR Fiddling with Fulcrums	Using levers and fulcrums to lift weight
AIMS	The Wheel and the Axle	Rubber-band booklet Read the lesson in the text pp.540-541 Take Em for a Spin - experiment
	Chapter 16 Lesson 3 AIMS	Rubber-band booklet “The Inclined Plane” What are Some Other Simple Machines pp. 546-547 “Plane Talk” – experiment Part I – fill in blank spring scale with the numbered increments Part II – Measure 6 items with the spring scale and record Part III – Plane Talk with the inclined plane (record on data table first and then graph)
	Chapter 16 Lesson 3 AIMS	Rubber-band booklet “The Wedge” Reading lesson pp. 548-549 “Where’s the Wedge?” – experiment OPTIONAL Art idea – bar of soap and chisel, potato & small knife
	Chapter 16 Lesson 3 AIMS	Rubber-band booklet “The Screw” Reading lesson pp. 550-551 “Twist and Turn” – experiment
	Chapter 16 Lesson 3	Lesson Quick Study RS123-124
	Chapter 16 Lesson 3 AIMS	What’s a Pulley? Making an Elevator
	Harcourt Text	Review with Vocabulary Power – Work and Machines Post-test Simple Machines
	Invention Convention	Inventions (Day 1) – find the different simple machines in the various pictures Inventions (Day 2) – look at the final products of the Mouse Eliminator” and identify the different simple machines Inventions (Day 3) – “Thing-a-ma-bob” Gadget invention

Resources:

Magic School Bus – Expedition to Science Fair (scientists, gravity, etc.)

www.pppst.com (Petes powerpoints)

www.hspscience.com

www.edheads.com



Word Wall – Science words (vocabulary cards – Reading Support & Homework)

Inquiry Standard: observation, infer, predict, identify, list/question/answer (KWL), chart, classify, compare/contrast, collect, record, communicate, measure

Physical Science: motion, force, work, simple machine, lever, fulcrum, wheel & axle, pulley, inclined plane, wedge, screw

Technology: tool, equipment, spring scale, ruler, scientist (engineer, contractor, builder, machinist, mechanic, doctor)

Math: tally, data, graph, data table, VENN diagram, measure (length, width, mass), physical characteristics/attributes, newtons

Vocabulary for Simple Machines

Motion: a change in position

Force: any kind of push/pull movement

Work: when you push or pull to move an object

Simple Machine: has few parts and can be used to make work easier.

Types of Simple Machines

1. **Lever:** a bar that turns on a fixed point
2. **Fulcrum:** the fixed point on the lever
3. **Wheel and Axle:** made of a wheel and an axle. An axle is the center line of a turning movement
4. **Pulley:** a wheel with a rope around it.
5. **Inclined Plane:** A flat surface that is tilted
6. **Wedge:** two inclined planes placed back-to-back
7. **Screw:** used to turn or lift an object or hold two or more objects together.