

## Lesson Plan

This lesson plan is developed by Ryan Chatfield of Aiea High School.

Lesson Plan	
<b>Lesson Title/Description</b> How do you know a coconut palm is healthy? Health Assessment of Palms	<b>Time Frame</b> <b>2 class periods</b>
<b>Learning Goals</b> (What Students Will Know and Be Able to Do)  Students will: -list characteristics of healthy palms. -identify palm disease (coconut rhinoceros beetle) -list ways to keep palms healthy -compare and contrast healthy and unhealthy palms Students will: -develop a health assessment data sheet -work collaboratively to map and document the health of each palm on campus.	

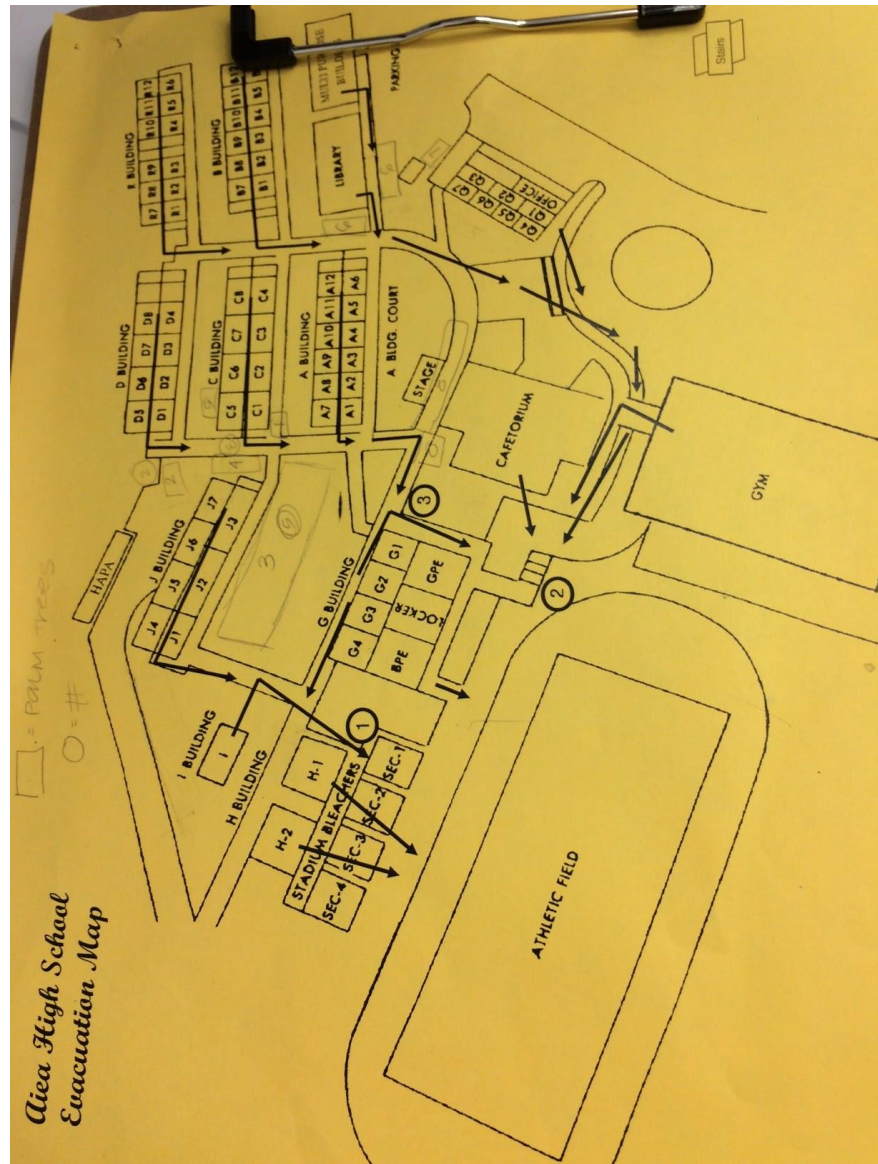
BENCHMARKS/STANDARDS/LEARNING GOALS
Health Services Pathway: Standard 2 HLC-2.0 Evaluate the impact of diseases, disorders and treatments on major body systems.  Standard 3 HLC-3.0 Analyze and apply medical terminology and mathematical concepts to communicate health care information.
English Language Arts: <u>CCSS.ELA-LITERACY.W.9-10.2</u>  Write informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content.

<b>Assessments</b> (please attach copies of rubrics and/or other assessment tools, if available)	<b>DOK</b>
<p>Formative - Journal entry and class discussion comparing and contrasting a pitures of two twins who have aged differently.</p> <p>Small group discussion observing color photos of healthy and unhealthy palm trees. Students present their group findings to the class for discussion.</p>	
<p>Summative - Campus Palm data is collected in a chart and students write a short summary and conclusion.</p>	
<b>Learning Experiences</b>	
<p>Materials -</p> <p>Color copies of palm trees for each group of students.</p> <p>Coconut Rhinoceros Beetle Digital Presentation</p> <p>Clip boards for data collection</p> <p>Handouts/Other Resources: None</p> <p>Procedure</p> <ol style="list-style-type: none"> <li>1 - Show digital pictures of twins and have students respond in their journal and discuss with an elbow partner before sharing out with the class.</li> <li>2 - Handout color photos of healthy and unhealthy palm trees to each group and have each group evaluate the health of the coconuts.</li> <li>3 - Discuss each group's findings and observations.</li> <li>4 - Teacher presents a digital presentation of Coconut Rhinoceros Beetle on Oahu. Review the main ways to identify infected trees and ways to prevent the spread.</li> <li>5 - Students generate a chart that they can use to assess the health of the palms on campus.</li> <li>6 - Students assess palm health by walking around campus.</li> <li>7 - Students summarize findings and make recommendations.</li> </ol>	

# Student Samples

✓ = HAS  
X = NONE

	bore hole damage	DAMAGED FRONDS / LEAVES	breeding sites / MULCH PILES	
site 1	X	X	X	
site 2 (2)	✓	X	✓	
site 3 (5)	X	X	Some piles X Piles by 3 trees	roots out clogging
site 4 (10)	X - in front of T <del>Damage on trees by T</del>	X - in front of T	X - in front by J Pile in tree behind D building	bring leaves
site 5	X	X	✓ (pile)	- need to be clean - too much water
site 6	✓ dying / not from bug	X	X	dead leaves
site 7	X	X	X	



Aiea High School Palm Tree Assessment

Overall, no sign of the coconut rhinoceros beetles. There was a beetle on one of the palm trees but our class wasn't sure what type of beetle it was. One of the palm trees were very unhealthy and it didn't seem to have any holes or signs of beetle activity. We believe it to be sick and extremely malnutrition. Two of the palm trees in the back had some sort of rotting on the bottom. Multiple palm trees in the front had holes an inch wide with red ants coming in and out of it. The tree itself did not seem affected. The hole did seem a bit distracting. I recommend

for the staff and maintenance to have a routine check at least every month to see if anything seems out of the ordinary with the palm trees or any of the plants that could be affected by the rhinoceros beetle. Lastly, for the prevention of any breeding for the beetle, to not have any mulch piles around campus because we found multiple ones in the back due to construction and mostly in the agriculture section of the school.





#13-14) - not clean  
- faded green however no brown  
- lots of bees on pollen

#15-22) - healthy  
- green  
- no broken leaves  
- lots of pollen

#23-24) - very tall  
- green  
- healthy  
- sways  
- no brown palms

### Palm Trees Health Assessment

#1) - 2 palms falling  
- ends of palms are brown/dying

#2) - 1 palm completely yellow  
- healthy  
- no damage

#3) - some dead palms

#4) - Big trunk  
- healthy  
- green

#5-6) - even palms  
- green  
- healthy  
- few brown

#7) - healthy  
- no brown leaves  
- wood damage

#8) - dead  
- brown  
- no leaves  
- falling apart  
- small palms

#9-12) - some brown leaves falling/fallen  
- overall looks healthy

	Color	Texture	Pattern of leaves	leaf piles	Small	dried out or nawn
(P)	Green/yellow	Yes	FAN	yes/bags	—	small line
lean high agriculture	Green/yellow	Yes	FAN	NO	Plenty	Small line
2. Behind	Green	lady bugs	FAN	yes	yes/by stick fruit	
m) Building	Green/yellow	NO	Fan	NO	Good	yes
G-2 in front	Green	no	Good fan	NO	Good	no
Building	Ugly	Yes	Sticky	no cos Janitors clean em	dead	Died
rogs office	Green healthy	Yes	NO open fan	NO	Nature	NAWN

I observed mostly dead trees, most of them actually did have a smell, it was a fruity smell but it was like a rotten smell. The color of the trees was mostly green but also had some dead ones and the color of that one was yellow. Some of the trees leaves was like a fan I would say or like a asian broom haha. But others was more like straight, and didn't have that fan type effects. There was ants on the trees, ladybugs, bees, beetles and flies. I observed that most of the trees did not have any left over dead leaf piles though so that was a good thing, pretty sure the janitors clean it up. What can improve that they should water the trees down, and when the dead leaves are yellow they should cut them off because having the dead ones there isn't helping any new stems to grow.