

HAWAIIAN TREASURE HUNT! PARENT SUMMARY

We are off on an adventure of a lifetime with your child as we travel the Hawaiian Isles in search of Dr. Lipid! This camp is comprised of exciting **STEAM** explorations. Each day will have activities in Art, Science and Technology.

The parent letter starts with the **Technology** component and followed by the **Art and Science** descriptions.

TECHNOLOGY FOR HAWAIIAN TREASURE HUNT

Our students will have the opportunity to build several different activities while learning how machines, programming and coding works. Most of these builds will be attempted during the camp time. How many activities completed depends on the abilities of the students. We hope to complete all builds offered in each class.

Levers:

Crazy Contraptions are geared more towards fun and using knowledge from previous classes. Your students will enjoy making and then using these activities.



We will be starting this class with Levers and the **Nine Foot Rubber Band Racer**. Your student will be using a ratchet and pawl system while continuing to explore the lever. Using a rubber band for power, they will create a car that can shoot across the room when they are wound up.

Air power Balloon Powered Rocket Car: In this activity the student will be exploring different types of power and how it can be used. By using a balloon your child will be able to race their fellow students while further understanding the science of air compression and release. This activity will tie in with pouring air and other air experiments within the Hawaiian Treasure Hunt.



Gravity Power



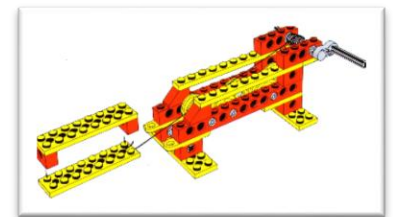
Coat Hanger Daredevil: How can we measure speed, distance and angles, all while we're having fun? Well, with a Zip liner, of course!! Ask your student how steep an angle was needed to increase the speed of their Lego® "man" on his zip liner. Did they safely increase the speed while ensuring their "Lego man" stayed on the line? Did gravity have any effect on the speed of the Daredevil?

Field Goal Kicker: More rubber band power in the form of a Catapult! How much tension would it take to a ball or a Lego element through the poles. Does the amount of tension on the band relate to speed and distance? Yes! Your student will experience the answers to these questions and more with the Field Goal Kicker. Ask your student to explain potential and kinetic energy!



The Tractor: What was the greatest invention that man came up with? Well, the Wheel of course!! (Okay, maybe fire but we can't catch wheels and axles on fire so.....) When did they come up with the idea of an Axle? Why does an axle complement the wheel, and do you think we just need 1 axle per set? What if your wheels are running on two different axles? These are just a few of the questions we will be exploring as we build "Tractors" to explore different wheel sizes and axle arrangements.

Roller Conveyor: How about using wheels as rollers? Do your wheels always need to touch the ground to be effective, or could we use them in different ways? What effect do we see when we tilt a "Roller Conveyor" system up or down? Does it hurt or help to use gravity as a source of power? Ask your student to tell you what you could use a roller conveyor for at home?



We will be exploring all these questions and more as we discover Wheels and Axles with your student!!

ART AND SCIENCE FOR HAWAIIAN TREASURE HUNT

DAY 1-3 INTRODUCTION AND THE ISLAND OF OAHU

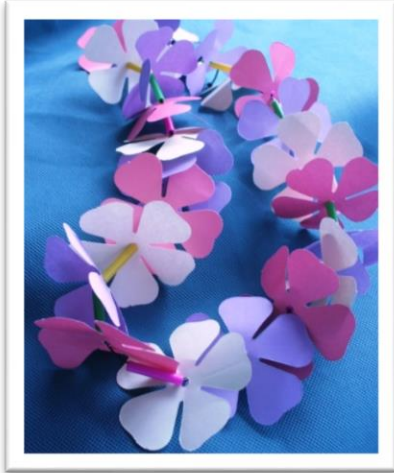
Introduction



We will start our camp with our story plot. We are the OXYS (Only eXcellent Youth Scientist) and we have been called to assist a 'friend' of ours who was the keeper of a secret map. The map has fallen into the hands of our arch enemy, Dr. Lipid who is bent on creating chaos in everything he does. The secret map could lead Dr. Lipid to a means to destroy the Islands.

Since the map is secret, our friend has asked the OXYS to help him decipher the map and get to the end of the riddle

surrounding it before Dr. Lipid. As you can imagine, the children in our class love the task of solving the riddles through science explorations!



Since we are in the Hawaiian Isles, the children will start with making their own beautiful leis.

Now we are going to decipher our first clue!

- **Clue #1:** *It shows up in all three elements, land, air and sea. When it shows up on a fish, its name is different, what can it be?"*
 - For this clue we will investigate iridescence. We will look for it in fish scales, cds, and bubbles.
 - The students will make their own iridescent fish, bubble wands and solution.
 - We will investigate how different shapes affect the shape of a bubble. Ask your child if a square blower made square bubbles!

Onto **TECHNOLOGY!** We will learn about levers and how they work as we build with our first lever technology system. (see details below) Ask your child how a lever works and remind them that this is a simple machine. Show them examples at home!



As we study fish and iridescence we will make a 3 dimensional coral reef.

We will also use our bubble expertise to create the background for our pictures.



We will start a project that will continue throughout the week. This is our Rainforest Vine. As we learn different animals and plants of Hawaii, they will be added to the vine.

Next we will combine art and science as we make a rainbow picture using chromatography. This will help students understand how colors can be broken down into their primary colors..



An 'Eruption'

- Next, we will introduce how the Hawaiian Islands were formed using an underwater erupting volcano. This concept will be reinforced later as we study plate tectonics.

We will do one more activity with chromatography with our color diffusing paper flowers.

The Island of Oahu



Our first clue has led us to Hanama Bay. A lagoon filled with tropical fish. Here we will study how fish float and can breathe oxygen underwater.

We will make a beautiful stained glass fish.

We will learn the Mammal Song so the children can learn the differences between fish and mammals.

We will do an experiment called Floaters to understand the air bladders that allow fish to swim without floating or sinking.

We need to dive under the water to retrieve our next clue – so

we will do a series of experiment called Pouring Air to see how air can be carried with us when we dive. We will learn how air takes up space and that it is lighter than water. Ask your child if they were able to “pour up”.

Oh no! As we dive we encounter a lot of jelly fish and have to swim back to shore. What is a jelly fish?

We will make a model jelly fish by using a cross linked polymer called “GAC”. We find out these are mushroom jelly fish and are safe so we resume our search for the treasure chest!

We find the chest but it is stuck under a rock so we need to use a lever to get it out.

We will continue with our technology activities focusing on Levers.

Ask the children about how the lever works! Success! We get the treasure chest out and find our next clue:

Clue #2 "Go to the land of the sleeping dragon...but be sure to let him be. Beyond his fiery breath lies the land that no man can reach by land, but... perhaps by sea."

Other side of clue: "Don't be confused when you arrive, there is one place the clue can hide. The cliffs will help guide you to me. Look for the inlet where fresh meets the sea."

ISLAND OF KAUAI! (DAY 4)



We are now off to new adventures as we study buoyancy and beautiful works of art as we travel to the island of Kauai! There is a place here called Hanalei Beach of the "Puff the Magic Dragon" Fame.

The art projects for this Island are:

- Drawing and Painting an Exotic Bird
- Fish Print T-shirts
- Painting an Island Scene

Why study buoyancy? Well, we need to create a boat to get there and then we must find our buried treasure that is floating in the space between the fresh water and saltwater in an inlet (as per our secret message).

First we must build a boat. :

Fresh water and salt water have different densities due to the salt making salt water heavier so it is fun for the children to create a flinker (an object that neither floats nor sinks) to understand buoyancy.



1. *"any body partially or completely submerged in a fluid is buoyed*
2. *up by a force equal to the weight of the fluid displaced by the body."*
3. *The weight of an object acts downward, and the buoyant force*
4. *provided by the displaced fluid acts upward.*
5. *If these two forces are equal, the object floats.*
6. *Density is defined as weight per volume.*
7. *If the density of an object exceeds the density of water, the object will sink.*



Ok, that is a big concept for young minds, so we do fun activities that make it clear even when the words are hard. This is a great way to learn science concepts at a young age!

These activities include:

1. What Shape is Water-learn about two of the states of matter, how to use a pipette and to show that melting ice does not raise the level of water in a cup.
2. Water Displacement- a fun hands on activity where sand, salt and sugar are added a little at a time so that children can see that solids that dissolve in water do not increase its volume until many teaspoons are added. This shows them that the same volume of water weighs more now than it did before (salt water is heavier so we feel lighter when in it).
3. Floats and sinks- here the children create an object that flinks (floats in the middle of a container of water. To do this the weight of the object must balance the buoyancy to flink for 20 seconds.
4. Next they create their boats out of clay and/or aluminum foil. They see how the shape makes all the difference in its ability to float. The larger the surface area, the more water is displaced and the more weights their boat can hold. They have a fun and friendly competition so see whose boat holds the most weight.
5. Next the children will go on a treasure hunt for the next secret message. This message is floating "where the fresh meets the sea"
6. While on the way we revisit the idea that the Hawaiian Islands are volcanic and explore one of the properties of lava rocks: They float! This is due to the air bubbles in them.
7. Once again we combine previous experiments in order to show that our flinker will float higher in salt water due to its higher density. This is how we find our next clue.

The art projects for this Island are:

- Drawing and Painting an Exotic Bird
- Fish Print T-shirts
- Painting an Island Scene

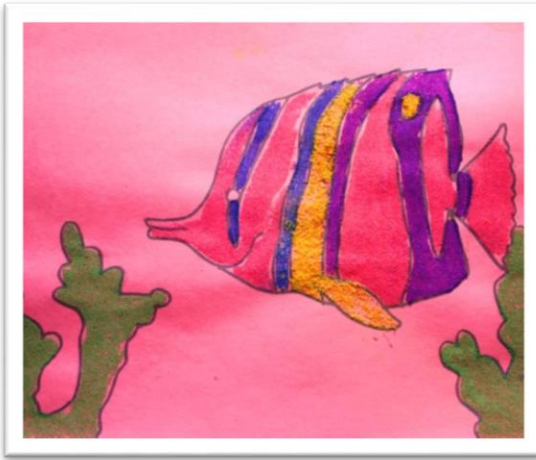
THE BIG ISLAND (DAY 5)

In this part of our Hawaiian Treasure Hunt, we have found ourselves on the Big Island on the top of Mauna Kea. A volcanic mountain that is so high that there is snow in summer! We are continuing on the quest to unravel the mystery of the map. Our newest clue will take lots of scientific explorations to decipher:

Newest Clue "To have come this far you are smart as can be, we are now finished with the sea. Look to the stars and planets above, go to place that air does not love. When you arrive, find the highest place, here planets line up and stars are in space. Where your shadow at dawn is longest is the direction you'll go. Be careful for in summer there still may be snow!"

This portion of Hawaiian Treasure Hunt is the beginning of to the Big Island- Rainforest! The main concepts your 'little scientist' will be learning about and some of the activities they will be doing are:

- That the Hawaiian Islands are a composed of many fragile environments.
- Volcanoes can create huge changes in the environment!
- We will be learning about the Tectonic Plates.
- We will explore magic mud. An Imagine That! favorite!
- We will have an anthropology dig.
- We will investigate Pictographs and Petroglyphs.
- We will also be learning the ends and out of Ecology in the Rainforest.



- Learning about plants, and how to plant them.
- Soil.
- Evaporation.
- Condensation.

Technology: We will learn about Wheels and Axles since we have to have a special vehicle to get us to the top of Mauna Kea. We would explain internal combustion engines but that is just tooooo much!)

Art will be a beautiful sand painting.

We will end our amazing adventure as the children go on a **real treasure hunt** to bring home some special items!

There will be much more! But, most importantly they will be having fun while doing many educational, hands-on Science activities!

Remember to let us know if your child is enjoying our program! We always strive to *Make Learning Fun!*

Aloha!