



El Niño & La Niña

What I Will Be Learning In This Mastery Badge:

In this mastery badge we will learn about El Niño & La Niña. Including their causes, and how they impact climate, weather, and living things.

What This Packet Includes:

It is important that you complete all aspects of this packet so that you gain the knowledge and skills that we are working on.

I. Discovering Lab

A discovering lab is a fun, introductory lab, where we discover the knowledge on our own.

II. Video Instruction

You will watch a video presented by Mr. Bertoch, and answer questions about it.

III. Literacy Practice

Reading and writing are critical life skills, and also very important to science. You will read the assigned article and complete a writing prompt.

IV. Applying Lab

An applying lab is how you pass off the Mastery Badge. It serves as the quiz. It is a hands-on demonstration that you have mastered the skills and content of this badge.

Key Things We Will Learn In This Mastery Badge

Some of the most important things we will learn in this mastery badge:

- What is El Niño?
- What is La Niña?
- What causes these phenomena to occur?
- What impact do they have on the climate and weather?
- What impact do they have on living things, such as fish?

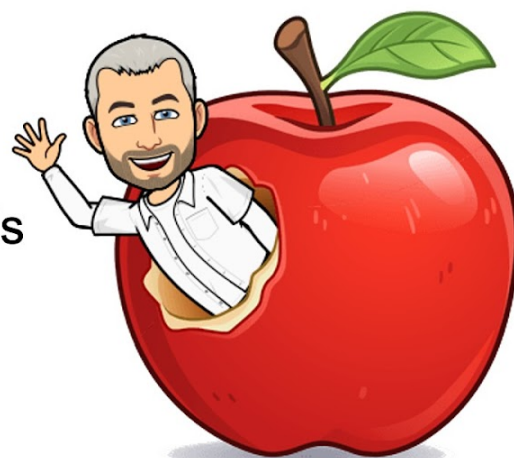
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Discovering Lab

Learning Through Hands On Activities



Activity: Discovering El Niño & La Niña

Directions: Follow the steps below to learn as much as you can about how El Niño & La Niña occur. By the end of this lab, you will not understand what El Niño & La Niña are. However, you will have a groundwork that will help you better understand what is taught in the video.



Video Instructions Available For This Assignment. Watch this video to learn how to do this assignment, and why it is important.

Scan This QR Code To Watch Mr. Bertoch Give You Directions For This Assignment

Goal: To learn as much as you can about El Niño & La Niña

Building Your Own El Niño & La Niña

For this lab, you will need a large waterproof tub (like a fishtank or rubber storage tub) water, food coloring, a fan, and oil.

Step 1.

Fill a tub with water. A fish tank works really well, but don't use one that has fish in it. You can also use a plastic storage bin, however it will be more difficult to see the effect of this experiment if the sides are not clear. Leave a couple of inches at the top.

Step 2.

Add food coloring to the water. It doesn't matter which color. This will just help us to keep track of what the water is doing.

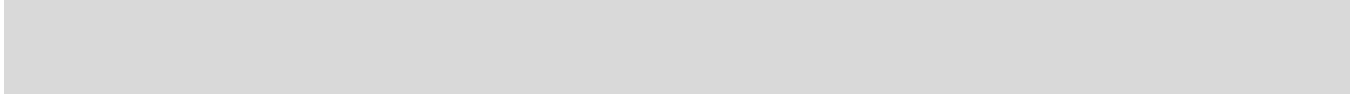
Step 3.

Carefully pour a small amount of vegetable oil on top of the water. Try to add enough so that there is about a half-inch layer of oil on top of the water. You may need to wait between pours to allow the oil and water to separate and settle.

Step 4.

Place a fan next to the fish tank and angle it so that it blows across the top. Observe what happens.

How does the layer of oil change when the fan blows across it?



Where is the oil the deepest?



What happens when you turn the fan off?



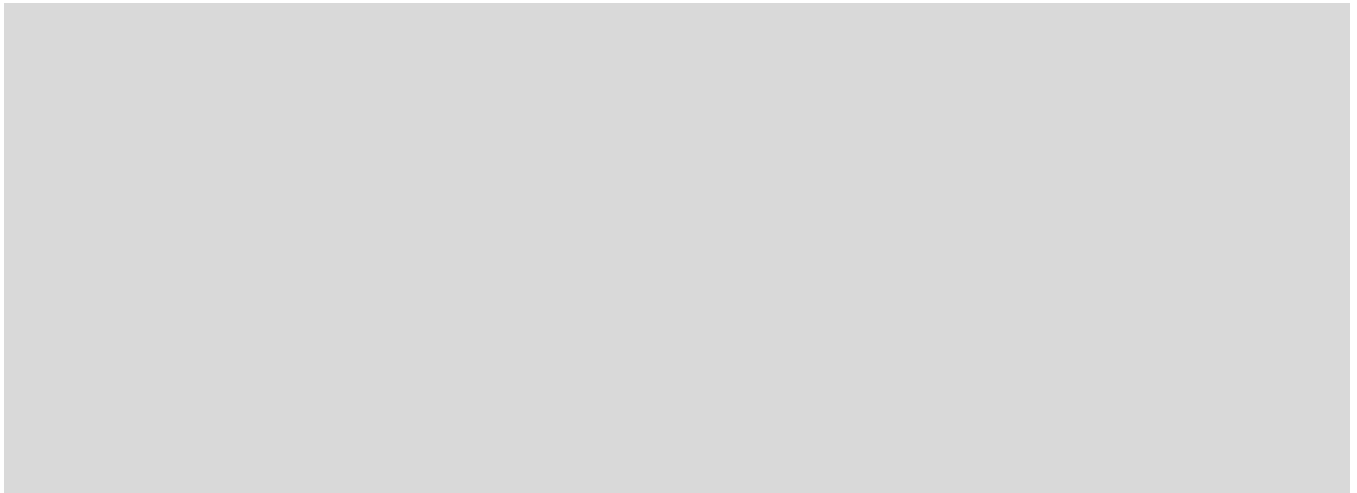
Relate this to the oceans. What do you think might happen if winds blew part of the ocean towards land?



What might happen if these winds stopped blowing?



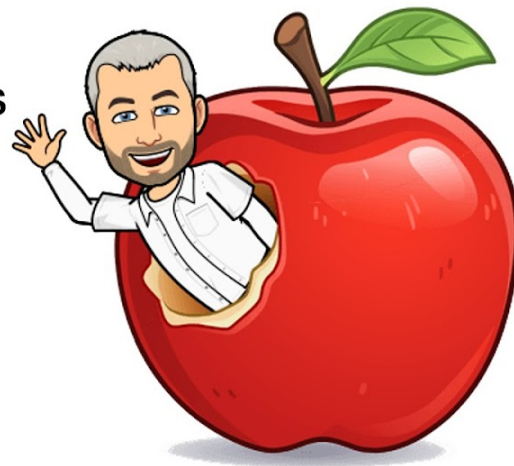
Draw a diagram showing what your tub of water and oil looked like while the fan was turned on.





Video Instruction

Reviewing The Teacher's Instruction At My Own Pace



Handsome Science Teacher One Take Videos

Now that you have completed the Discovering Lab let's watch the video that goes with it. In this video Mr. Bertoch will help connect the discoveries that you made during the lab to the broader concepts covered under this badge, and will also introduce the vocabulary that goes with these concept.

Take Your Time, Pause And Rewind As needed

You are not in a hurry! It is more important that you understand the concepts in this video than that you finish it quickly. Take your time. If you don't understand something, pause the video and use the Internet or other resources to look up the concept that has you confused.

When you finish this video, you should have a good understanding of the concepts that have been taught. If you find yourself confused, rewind, and rewatch.

The Videos For This Mastery Badge Can Be Opened Using These QR Codes

This Mastery Badge includes two videos:



Watch The Assigned Science Videos

Scan This QR Codes To Open And Watch The Assigned Videos For This Mastery Badge

Check Point

Let's make sure that you really did take your time and watch the video carefully! Remember that it is important to hold yourself accountable to a high standard and to take pride in your own success as a learner.

I watched the video carefully, and paused to look up anything I didn't understand.

Recording Your Learning

On the next page, you will record your learning and connect it to things you already know.

Ten Things I Learned From This Video

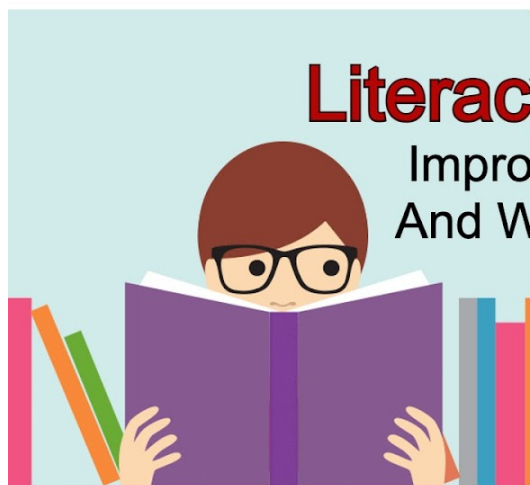
A powerful tool to help you retain what you learn is to take notes. Notes give you something that you can look back at later, to quickly remind your brain reinforcing the memories for the concepts you have learned. Record ten things that you learned or that you perhaps already knew that were discussed in this video.

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.
- 7.
- 8.
- 9.
- 10.

Now, Let's Connect These New Concepts To Things You Already Knew

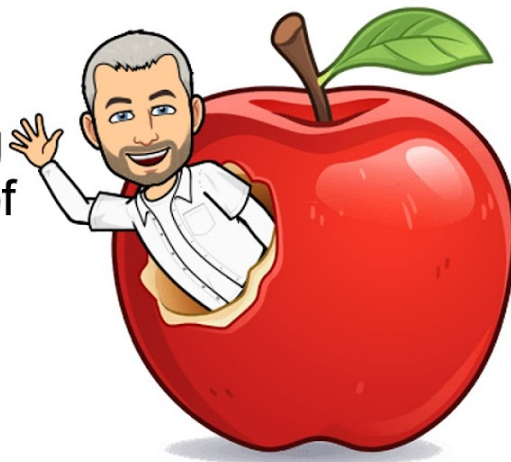
Another great way to help your brain retain new things is to connect these new concepts to other things that you already know. This gives your mind a place to store the new knowledge. Imagine that you are placing the new knowledge on a shelf in your brain next to facts that are already in there.

Write a paragraph explaining how the concepts taught in this video relate to things you already knew. There are no wrong answers. What are some things that you already knew that this video reminded you of?



Literacy Practice

Improving Our Reading
And Writing In Search of
Knowledge



Activity: Reading And Writing About Biomes

Directions: Reading and writing are very important life skills. Good scientists must be able to learn through reading and communicate their own discoveries through writing.



Video Instructions Available For This Assignment. Watch this video to learn how to do this assignment, and why it is important.

Scan This QR Code To Watch Mr. Bertoch Give You Directions For This Assignment

1. Practice Reading For Understanding

Read the article below **for understanding**. Reading for understanding means that you take your time and monitor your own learning. If you get to the end of a sentence and you do not remember or understand what you read, **re-read it**.

2. Practice Writing To Communicate

Complete the writing prompt below. Do your very best to write clearly so that others will understand what you are saying. This means using correct spelling, grammar, and writing, taking your time to think about the best ways to clearly communicate to others the main ideas that you are trying to get across to them.

Article:



Read The Assigned Article Carefully For Understanding.

<https://handsomescienceteacher.com/Online-science-classes-kids/el-nino-la-nina/>

Scan This QR Code To Open And Read The Article That Goes With This Mastery Badge

Check Point

Let's make sure that you really did read for understanding! Remember that it is important to hold yourself accountable to a high standard and to take pride in your own success as a learner.

I Read For Understanding. I did not skim the article. I understood the material that the article discussed.

Quiz Time

Complete the quiz at the end of the article and post your score in the box below. Your goal is to get at least 75% on the quiz. Did you accomplish this goal?

%

Now Let's Write To Communicate

Remember that when you write to communicate you are taking your time, and explaining the topic in a detailed and concise way. Don't rush! You are not in a hurry. Think about what you are going to say, and plan how you will say it. So that someone else who reads your paragraphs will understand them easily.

Writing Prompt: Write two paragraphs in your own words explaining what El Niño is and why it occurs.

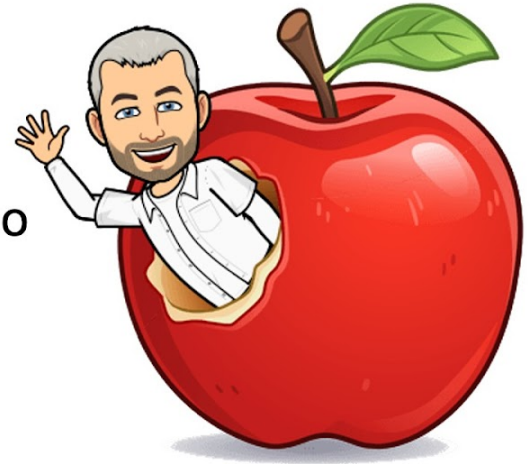
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Date: _____



Applying Lab

Proving That We Can Do It Ourselves



Activity: Applying El Niño & La Niña

Directions: In this activity you will be writing a short article for a fictional scientific journal.



Video Instructions Available For This Assignment. Watch this video to learn how to do this assignment, and why it is important.

Scan This QR Code To Watch Mr. Bertoch Give You Directions For This Assignment

Goal: To demonstrate your understanding of El Niño & La Niña

Congratulations! You have been selected as “Scientist of The Month” here at Acme Science Labs. It is a tremendous honor. You won’t get a plaque, a trophy, or any extra money. We aren’t even going to put your picture on the wall. But what we are going to do is assign you extra work! You’re Welcome! And again, congratulations for being selected as ~~victim~~, err, I mean employee of the month!

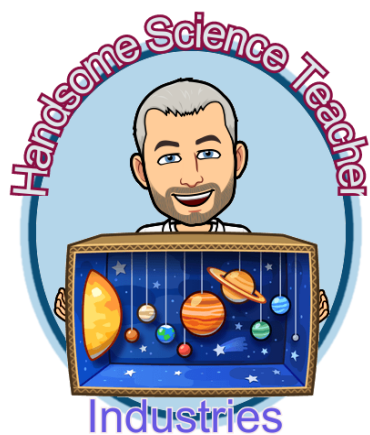
Your Employee of The Month Assignment:

While the rest of us relax in the breakroom, you are going to write an article for The National Oceanography Science Journal.

Make Sure Your Article Includes All of The Following:

- Your article should be at least five paragraphs long.
- It should include at least two references, properly cited, from other resources, such as online articles or books.
- Your article should thoroughly explain what El Niño & La Niña are, what causes them, and how they affect the Earth.

You have already done some of this work in the literacy assignment. It is okay to use that work and build on it / expand what you wrote there.



Congratulations! You Have Completed The Entire Mastery Badge

You have worked really hard to earn this mastery badge. More importantly, you have worked hard to earn your knowledge!

Time To Evaluate Your Work

Check each of the following to evaluate your work:

1. Did you do every assignment?
2. Did you read the assigned article?
3. Did you watch the assigned video?
4. Did you answer all the questions using complete sentences?
5. Are your answers accurate?

My Self-Evaluation:

Based on the criteria listed above, I believe I have passed off this Mastery Badge because...
(Be detailed and specific)

Mastery Badge Counselor Evaluation:

I have reviewed this student's work. Based on the criteria listed above I hereby certify that they have passed off the Mastery Badge because... (Be detailed and specific) Note: Any adult may serve as a Mastery Badge Counselor, so long as they are committed to ensuring the highest standards of excellence.

Student's Signature

Date

**Signature of Mastery
Badge Counselor**

Date

Certificate For Your Homeschool Records

The following certificate which has been awarded through self-evaluation by the student, and also certified by a mastery badge counselor proves that the student listed thereon has completed all the work and has mastered all the concepts for the specified topic.

Keep this on file as evidence of your successful completion of this topic.

If audited by the State, these certificates stand as evidence that you have worked on and successfully completed a rigorous science curriculum.

