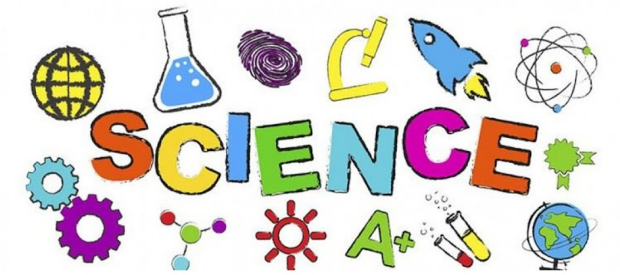
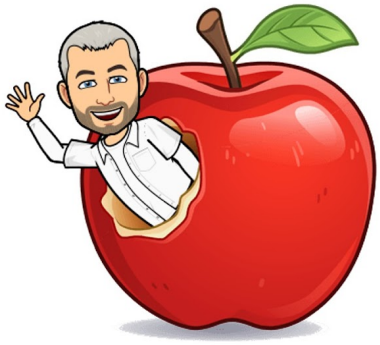




Energy Travels Through Space & Substances

What I Will Be Learning In This Mastery Badge:

In this mastery badge we will discover how energy moves through the Universe.

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:

- Though energy cannot be created nor destroyed, it does move around.
- Some of the ways that energy moves is as heat, electricity, light, and sound.
- This energy can be detected and measured.

Name:_____ Date:_____

Discovering Lab

Learning Through Hands On Activities

Discovering How Energy Moves

Making your own discoveries.

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

Energy Moves Through The Universe

Energy does sometimes remain still, but often it moves from one place to another. It does this in a number of different ways. In this lab you will explore different forms that energy can take, and how it travels from one place to another.

Supplies:

For this lab you will need a candle, a lighter or match, a small thermometer, a flashlight, a speaker, and a balloon.

How Does Energy Move Through The Universe

Energy is sometimes stored in an object or substance. Such as when electricity is stored in a battery.

Other times energy moves from place to place. In this lab you will observe energy moving and measure its movements.

Energy Can Travel As Heat

One way that energy travels is in the form of heat. Heat is a type of energy that allows energy to radiate out from a central source.

1. Light a candle and set it on a table.
2. Carefully place your hand near (not too close) the candle and feel the heat.
3. Now slowly move your hand further away.
4. Use a small thermometer to take a temperature reading a few feet from the candle. Then take a second temperature reading a few inches from the candle. Record your results below.
   Note: You will need to wait a minute for each reading, while the thermometer samples the temperature.

If energy cannot be created, where do you think the energy in the candle is coming from?

When you place your hand near the candle what do you feel? How is that energy getting from the candle to your hand?

Energy Can Be Measured

Record the temperature a few feet away from the candle. Temp:	Record the temperature a few inches away from the candle. Temp:

Energy Can Travel As Light

Another way that energy travels is in the form of light. Light allows energy to move out from a central source in the form of waves.

1. With an adult's supervision, take a partner outside on a dark night and move so that you are several meters apart.
2. Turn a flashlight on and off, and record your results below.

If energy cannot be created, where do you think the light made by the flashlight is coming from?

How did the light get from the flashlight to your eyes?

Energy Can Travel As Sound

Another way that energy travels is as sound. Sound allows energy to move through substances like air and water.

1. Connect a speaker to a device and play a loud song.
2. Place your hand near the speaker.

What do you feel when your hand is near the speaker?

Energy Can Travel As Electricity

Energy also travels as electricity. We think of electricity as traveling in wires, and it does. But it also travels through the air. An example of this is lightning.

1. Blow up a balloon.
2. Rub it in your hair for 60 seconds.
3. Hold the balloon above your head, or above either someone else's.
   Note: This experiment will not work on all types of hair. It is okay to use a doll.
4. Place the balloon against the wall or ceiling.

What happened when you held the balloon above someone's head? Why do you think their hair was attracted to the balloon?

What happened when you held the balloon against the wall? Why do you think the balloon was attracted to the wall?

Have you ever been shocked? Being shocked is caused by tiny electrical charges that move from one object to another. Like tiny lightning bolts. Where do you think that energy comes from?

Handsome Science Teacher One Take Videos

Good Job On Completing The Discovering Lab!
Now let's connect your discoveries to the vocabulary. Mr. Bertoch has created a video for you to watch.

Take Your Time, Pause And Rewind As needed
You are not in a hurry! It is more important that you understand the video than that you finish it quickly. Take your time. If you don't understand something, pause the video and discuss with an adult.

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 Video For This Mastery Badge Can Be Opened Using This QR Code

This Mastery Badge includes one video:

Watch The Assigned Science Video
Scan This QR Code To Open And Watch The Assigned Video For This Mastery Badge

Check Point

I watched the video carefully, and understood what Mr. Bertoch taught me.
(If not, that is okay. Watch the video again, and discuss it with an adult)

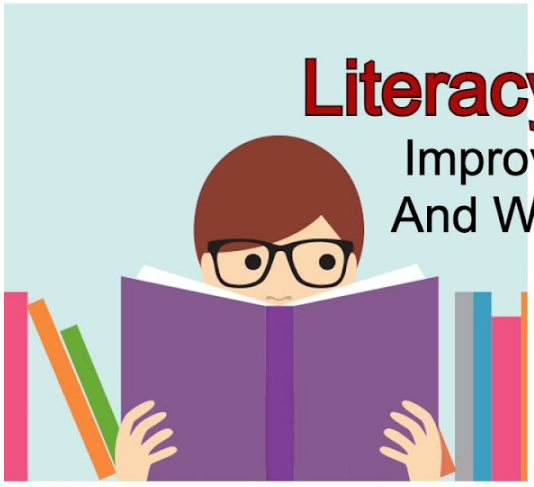
What I Learned From This Video

One very powerful way to help yourself remember what you learned from the video is to summarize it in your own words and in the form of pictures.

Write one sentence in your own words explaining what you learned from the video. Then draw a picture of something you learned from the video.

What I learned from this video (One Sentence):

A picture of something I learned from the video:



Literacy Practice

Improving Our Reading And Writing In Search of Knowledge

Activity: Reading And Writing

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.

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.

Read The Assigned Article Carefully For Understanding.
https://handsomescienceteacher.com/Online-science-classes-kids/energy-travels-from-place-to-place/

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

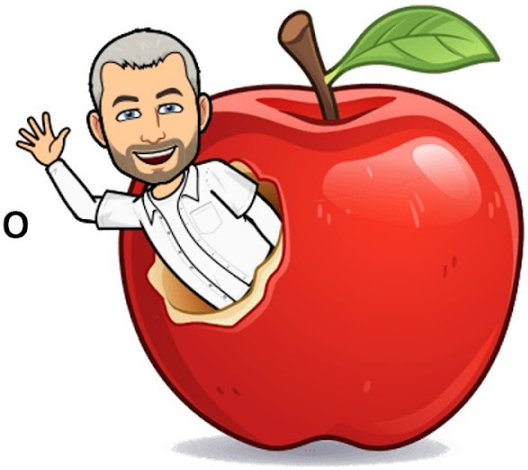
Remember that when you write to communicate you are taking your time, and explaining the topic in a detailed and concise way. Don’t rush! You are not in a hurry. Think about what you are going to say, and plan how you will say it. So that someone else who reads your sentences will understand them easily.

Writing Prompt: Write two sentences describing how energy moves from one place to another.

Name:_____ Date:_____

Applying Lab

Proving That We Can Do It Ourselves



Applying Energy & Movement

Applying What We Have Learned.

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

The Imperial Mines of The Moon Jakita

Welcome to Jakita Imperial slave! You have been assigned to work in the ice mines. Where you will help in the very important work of mining ice for the royal family's lemonade.

It is very cold on Jakita, and we don't provide warming equipment for slaves. However, you are welcome to invent your own solutions to keep warm.

Heat is a form of energy. Where will you find energy on Jakita to produce heat? Be creative and use your imagination.

How will you move that energy from wherever you find it, to the depths of the Jakita mines? Examples might be to move it as electricity through wires, as heat through the air, etc.

Draw a detailed diagram showing how you will collect and transport energy, and then how it will be turned into heat.

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 ans 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.