



Pollution

What I Will Be Learning In This Mastery Badge:

In this mastery badge we will learn about pollution, and its effects on the environment.

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 pollution?
- Air pollution
- Water Pollution
- Soil Pollution
- Garbage
- How can we mitigate pollution?

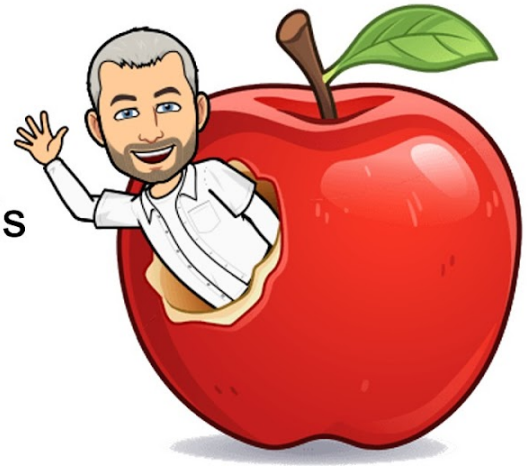
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Discovering Lab

Learning Through Hands On Activities



Activity: Discovering Pollution

Directions: Follow the directions below to learn how pollution affects the Earth.



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 how pollution affects different environments.

Part 1. Garbage And Debris

Let's find out how challenging it is to clean up garbage and debris. For this experiment, you need to create a small meadow.

- Place a large tortilla on the table, which will represent the ground.
- For fun, you can add little trees or animals around the meadow.
- Crumple up tiny pieces of paper and spread them out across the meadow.
- Now pick them up!

How hard was it to pick up the small pieces of garbage?

How hard do you think it would be to pick up actual garbage in a real meadow?

Keep your meadow, we will use it again later, but first...

Part 2. Water Pollution

Let's find out how challenging it is to clean up water pollution

- Fill a glass jar with clean fresh water.
- Add a few drops of food coloring to the jar to represent pollution.
- Observe what happens as the pollution spreads throughout the body of water.

What happens when a small amount of pollution is added to a large body of water?

How long does it take for the pollution to spread throughout the entire body of water?

How hard do you think it would be to get the pollution back out of the water?

Part 3. Soil Pollution

Let's find out how challenging it is to clean up soil pollution

- Take your polluted water back to the meadow that you created in part 1.
- Gently pour some of the polluted water onto the ground (tortilla) of your meadow.
- Observe what happens.
- Try to clean the pollution out of the tortilla without damaging it.

What happens when a small amount of pollution is added to the soil?

What happened when you tried to clean the pollution out of the tortilla?

How hard do you think it would be to get the pollution out of the soil?

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 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

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.

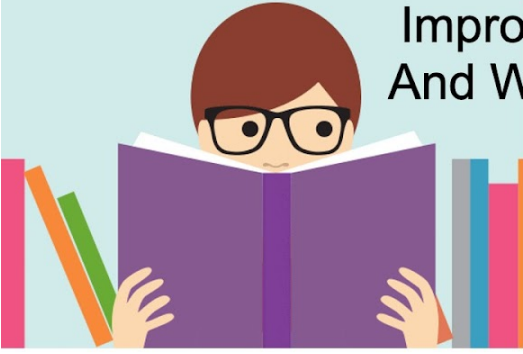
Now, Let's Connect These New Concepts To Things You Already Knew

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 Lunar Phases

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/pollution-and-mitigating-solutions/>

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 discussing the various types of pollution.

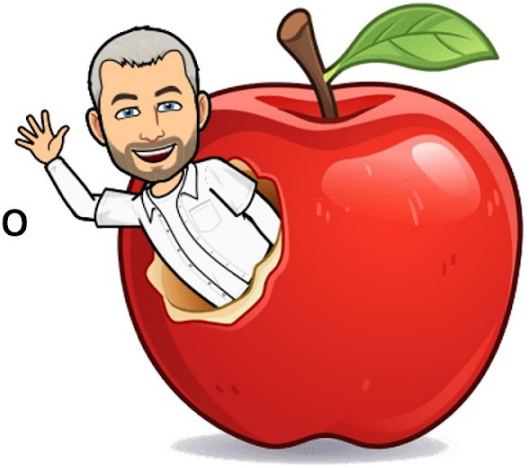
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Applying Lab

Proving That We Can Do It Ourselves



Directions: Solving The Pollution Problem



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 create a solution solving the pollution problem

Applying Pollution Through Engineering Solutions

A very important type of scientist is an engineer. Engineers use science to solve real-world problems. Which helps humankind continually improve. In this lab you are going to become an engineer. Your assignment as an engineer is to design a solution to help mitigate the problem of pollution.

Step 1. Select a form of pollution that you want to help reduce.

This can be any kind of pollution, such as water, air, soil, and trash. There are other types of pollution we did not talk about in this mastery badge which you can also select, such as noise pollution, light pollution, and so forth.

What type of pollution will you be trying to reduce? Why did you pick this type of pollution?

Step 2. Discuss the type of pollution you selected.


In your own words, describe the pollution type that you selected. How does it impact the environment?

Step 3. Describe what you will do to help reduce this type of pollution.

Note: It is tempting to think that all the best ideas are already taken. There are, after all, a lot of engineers working to solve these problems. However, the truth is that there are still many good ideas that no one has ever thought of. In fact, there are more good ideas that have not yet been thought of, than there are good ideas that have already been put into action by other engineers. Believe in yourself. You are smart enough to come up with a great idea.

What will you do to help reduce the type of pollution you selected?

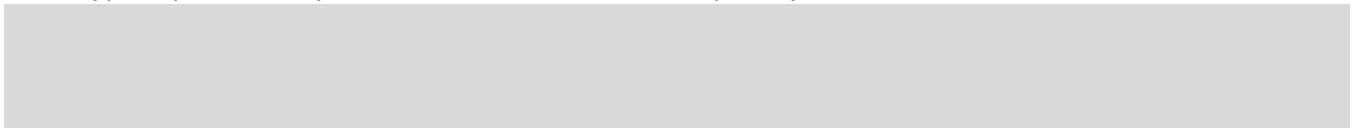
Write a detailed explanation of your solution. It would also be helpful to include a diagram of your ideas.




Final Questions:

Remember to write your answers using complete sentences.

1. Which type of pollution do you think is the hardest to clean up? Why?



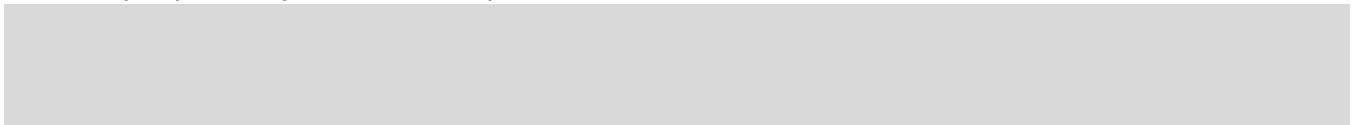
2. How does pollution harm the environment?

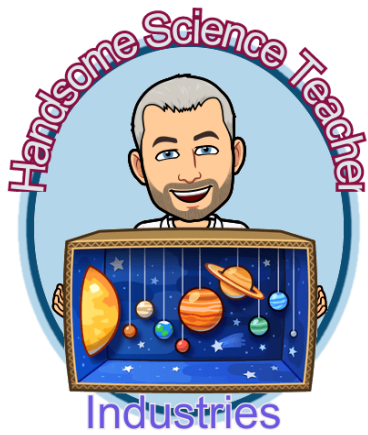


3. What can humans do to decrease pollution?



4. What can you personally do to decrease pollution?





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.



The certificate is framed by a decorative, repeating pattern of stylized faces. On the left side, there is a circular logo featuring a cartoon man with a beard and glasses, wearing a white lab coat, holding a tablet displaying a solar system with planets and stars. The text "Handsome Science Teacher" is written in a pink, curved font above the logo, and "Industries" is written in blue below it. The main title "Mastery Badge Certificate" is centered in a large, black, serif font. Below the title, the topic "Topic: Pollution" is written in a blue, sans-serif font. Underneath, the text "Student Name:" is followed by a solid black horizontal line. The central text reads: "This certificate certifies that the person named above has completed all of the requirements to earn this Mastery Badge." At the bottom, there are two horizontal lines for signatures. The left line is labeled "MASTERY BADGE COUNSELOR SIGNATURE" and the right line is labeled "DATE AWARDED". In the bottom right corner, there is a smaller version of the "Handsome Science Teacher" logo.

Mastery Badge Certificate

Topic: Pollution

Student Name: _____

This certificate certifies that the person named above has completed all of the requirements to earn this Mastery Badge.

MASTERY BADGE COUNSELOR SIGNATURE

DATE AWARDED