

These activities and questions have been designed for you to have engaging discussions with your student about the STEM jobs they are encountering in their Learning Blade schoolwork. Here is an overview of what is included in this.



**Table Talk:** These are questions you can ask your student without having any background knowledge in STEM. These will be easy conversation starters.



**Dig Deeper:** These are questions with suggested links to learn more about different STEM careers to explore with your student.



**Home Lab:** This is an easy, hands-on activity to do with your STEM student.

## What Has Your Student Been Learning?

In this mission your student is tasked to use social media and data analysis to help determine the next flu outbreak. Along the journey students need to determine what tools (**big data, computer data, social media, GIS- geographic information systems, and vaccines**) and teammates/experts (**database administrator, statistician, anthropologist, and epidemiologists**) are needed to develop a model that will more accurately predict flu outbreaks. It is up to the student to determine what help is required based on the clues provided.

## TABLE TALK

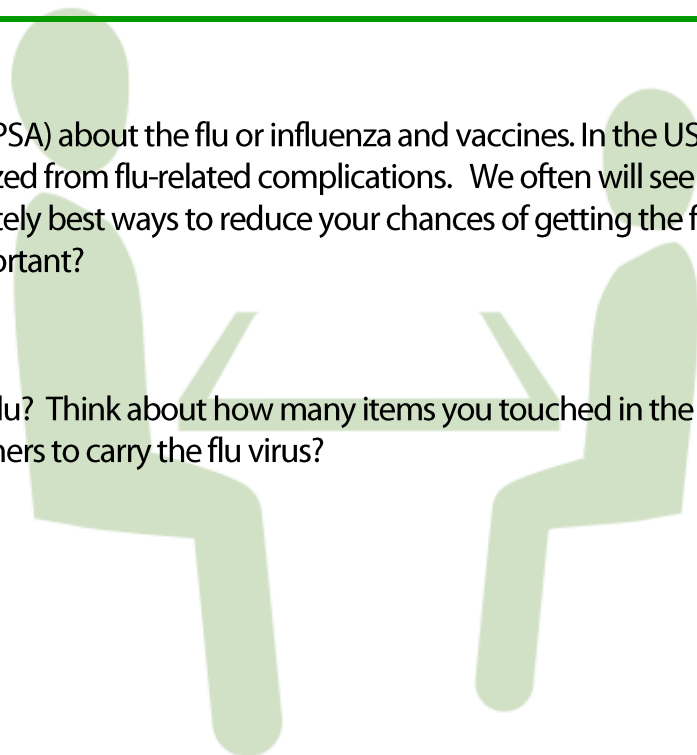
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### Starter Question:

Every year we hear Public Service Announcements (PSA) about the flu or influenza and vaccines. In the US, more than 200,000 people annually will be hospitalized from flu-related complications. We often will see these PSA's through social media. One of the absolutely best ways to reduce your chances of getting the flu is to wash your hands. Why is hand washing so important?

### Helpful Hint:

What is it about our hands that causes us to get the flu? Think about how many items you touched in the course of a single day. Are some more likely than others to carry the flu virus?



## DIG DEEPER

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### Resources for More Information:

In this section we provide a series of links and associated questions to DIG DEEPER on individual careers addressed in the Flu Outbreak Mission. Feel free to explore these with your STEM student as you model curiosity and lifelong learning.

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How can we prevent getting the flu? Vaccines are one way. Have you ever gotten a vaccine? How do they help prevent you from getting the Flu? Why do you have to get a new Flu vaccine every Flu season? If available, learn more ways to prevent the flu at the link below.

<https://www.cdc.gov/flu/pandemic-resources/national-strategy/index.html>

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What do you think of when you hear “**Big Data**” and what kinds of careers work with “big data?” What is “Big Data?” Watch this short animation to learn about the history of the internet and big data.

<http://ed.ted.com/lessons/exploration-on-the-big-data-frontier-tim-smith#review>

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Name all of the objects in your home that run on some sort of computer.

**Computer Programmers** are the ones that make it possible. Computer Programmers have a very important job in our society. They are the people who tell technology what to do, when to do it, and how to do it through a series of codes. Learn more about what computer programming is by watching this video.

[https://youtu.be/6JWeXvuvb\\_o](https://youtu.be/6JWeXvuvb_o)

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How can social media help prevent the spread of the Flu? Have you ever heard about a new virus or how to prevent getting sick through the news or social media? This can help spread information to a large number of people very quickly. Look at the flu map of your zipcode at the link below.

[www.flunearyou.org](http://www.flunearyou.org)




## HOME LAB (online version)

In the Flu Mission, students learn about the spread of the influenza virus and the many strategies to mitigate its impact.

With your STEM student, try this very challenging and engaging game, Solve the Outbreak. In this game you will work to identify possible virus cases to prevent a disease outbreak.

<https://www.cdc.gov/mobile/applications/sto/>



CDC 24/7 Saving Lives. Protecting People

**Level 1**  
12 Outbreaks  
0 out of 18,000 points

**Level 2**  
8 Outbreaks  
0 out of 12,000 points

TAP A VIRUS ABOVE TO SELECT A LEVEL

**SOLVE THE OUTBREAK**  
BECOME A DISEASE DETECTIVE

**outbreak** [out-breyk]  
the occurrence of illness or disease in a specific location and time period that is greater than the expected rate.

CDC

## HOME LAB (offline version)

In the earlier part of this lesson, you discussed the importance of hand washing in controlling disease outbreaks. Now let's do a hands-on experiment that shows how soap cleans and protects you from germs and other dangers.

### Materials Needed:

- Small bowl or dish
- Water
- Ground pepper
- Dish soap
- Paper towel



### Procedure:

1. Pour a small amount of water into the bowl or dish so the entire bottom is covered with water.
2. Lightly sprinkle a thin layer of pepper over the top of the water. (A light amount of pepper work better than a heavy amount for this experiment.)
3. Educators and parents should have students gently touch a finger to the top of the water. Then ask the student what happened when they touched the water. (They'll probably say something like their finger got dirty/ got pepper on their finger.)
4. Have the student clean the finger with the paper towel.
5. Have the student put a tiny amount of dish soap on their finger. (Just rubbing their finger across the soap dish nozzle will probably get enough soap n their finger for this experiment.)
6. Now, have the student lightly touch that finger to the water. Then ask the student what happened. (They'll probably say something like the soap pushed all of the pepper away from the finger.)

### Discussion:

Soap has chemical properties that break the surface tension of the water and helps prevent dirt and other contaminants from sticking to your skin. What does this experiment show about the difference between washing something with just water, and washing with soap?

Anti-bacterial soaps and other cleaners also have chemical additives that help kill bacteria and viruses. How do these types of soaps help reduce sicknesses?

After performing this experiment, how would you explain to someone the importance of washing hands and surfaces to help control the spread of diseases?



# #STEM4Parents Flu Outbreak

**Dear Parent/Guardian,**

I kindly ask that you fill out and sign this piece of paper so I can provide your student with a completed grade for this #STEM4Parents homework assignment.

I discussed with \_\_\_\_\_ the Flu Outbreak Mission in Learning Blade.  
(student name)

\_\_\_\_\_  
Student Signature



\_\_\_\_\_  
Parent/Guardian Name (print)

\_\_\_\_\_  
Date

\_\_\_\_\_  
Parent/Guardian Signature