e- Bug IDL Project- Early/First Level

This week we are going to be learning about the spread of infections and how microbes can be spread. Remember- if you need anything for experiments phone us at school!

Activity 1- Hand Hygiene-

We learnt last week that some microbes can be harmful to us and that they can spread easily.

Our hands are actually covered in lots of good bacteria- usually the bacteria called Staphylococcus. Our hands also naturally produce oils which stop our skin from drying out. However, this oil means that harmful microbes stick to them and can breed quickly. It is important that we wash our hands regularly and thoroughly to get rid of the bad bugs.

When do we need to wash our hands? How many times have you washed your hands today?

Task- Horrid hands experiment

When we wash our hands, we have to make sure that we wash them properly. Try the Horrid Hands Experiment.

1. Cover your hands in a small amount of cooking oil and sprinkle them with cinnamon or glitter.
2. Carry out the experiment 4 times. See how clean your hands are each time.
3. A) No washing (control). B) Wash with cold water. C) Wash with warm water. D)Wash with warm water and soap.
4. Use the Horrid Hands recording sheet on the pages below to record your findings and conclusion.
5. Ask someone to take photos of your hands each time. Post your photos on the blog!

Bonus Task- Why Use Soap? Experiment. Find this experiment on the pages below.

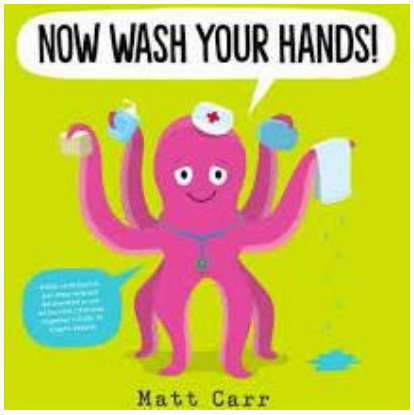
Activity 2- Hand washing reminders-

We know that it is really important for us to wash our hands when we are at school. Sometimes it can be hard to remember though. Having bright, eye catching posters with fun characters displayed can help to remind us.

Task- Hand washing hero design

Your task is to create a fun character/hero who can be used on posters in school to help remind us to wash our hands properly.

Look at the examples below for some ideas.



Once you have drawn out your character/hero use them in a bright, eye catching poster which could be displayed in school.

Give your hero a slogan or catch phrase which will help to remind us about hand hygiene.

Remember all of the things you know about poster design and include them in your piece of work.

Bonus Task- Use your hero in a comic strip about hand hygiene. For help on how to create a comic strip watch this video- https://www.bbc.co.uk/bitesize/topics/zkgcwmn/articles/zbk47nb

Show us your poster designs on the blog!

Activity 3- Respiratory Hygiene 1-

Another way harmful microbes can be spread from person to person is through coughs and sneezes. It is important that if we cough or sneeze, we aim to reduce the spread of these microbes by using a tissue. This is called “respiratory hygiene”.

Watch this video to learn more about why we sneeze-
https://www.youtube.com/watch?v=XzCs3XSGm0Y&feature=youtu.be

When we sneeze or cough tiny droplets of mucus and water are released into the air. These droplets can contain thousands of harmful microbes which can be passed on to someone else. You may have heard people saying “You gave me the cold”. Things like the cold and flu can easily be passed on from person to person.

Task- Super Sneezes experiment

To help stop the spread of these nasty bugs we should use a tissue when we cough or sneeze.

You will need-

- a sneezing runway (pieces of paper laid out in a line or paving stones outside)
- three different colours of food colouring
- an empty spray bottle
- a ruler or measuring tape
- tissues

Instructions-

- Use the Super Sneezes predictions and recording sheet on the pages below.
- Set up your sneezing runway or find an empty space outside.
- Fill your empty spray bottle up with water a couple of drops of one of the food colourings.
- Stand at the end of your sneezing runway and spray the coloured liquid. Use a measuring tape or ruler to measure how far it goes.
- Clean out your spray bottle. Fill with water again and add the next food colouring.
- Stand at the end of your sneezing runway and spray the coloured liquid. This time though, put your hand in front of the bottle.
- Use a measuring tape or ruler to measure how far the coloured liquid goes.
- Clean out your spray bottle and fill up with water and the last food colouring.
- Stand at the end of your sneezing runway and spray the coloured liquid. This time put a tissue in front of the bottle.
- Use a measuring tape or ruler to measure how far the coloured liquid goes.

Remember- if you cough or sneeze into a tissue you have to throw it in the bin straight away and also wash your hands!

Activity 4- Respiratory Hygiene 2

We know that it is important to use tissues, hand sanitiser, wipes and soap in order to keep ourselves safe from harmful microbes- especially in the past year during the Covid-19 pandemic.

Task- Robot design challenge

You challenge is to design a robot which will help us with our hand and respiratory hygiene.

PRODUCT DESIGN BRIEF- Design a robot which improves hand and/or respiratory hygiene. Your robot should help to stop the spread of harmful microbes.

Your design should include-

- **What your robot does and what features it has**
- **What size and shape it is**
- **Where it can be used and who can use it**
- **What materials it will be made out of**
- **How much it will cost to make and buy**
- **What it will look like**
- **Why people should buy it**

Maybe your robot will wash your hands at the sink. Maybe it sprays surfaces after they have been touched. Maybe it hands you tissues when you cough or sneeze.

Draw and label your robot. Write a description of your robot which includes the things mentioned in the design brief. Make a model of your robot if you want to.

Watch this video of school children in Taiwan who built a hand washing robot- https://www.bbc.co.uk/newsround/51824178

Share your designs with us on the blog.

Bonus task- Super Slimy Snot experiment- Make some Super Slimy Snot using the instructions sheet on the pages below.

Horrid Hands?

Procedure

After the activity, write your results in the box provided using the guide below and see how far the microbes have spread!

My Observations

	After washing (or not washing) and shaking hands				
	Student 1	Student 2	Student 3	Student 4	Student 5
No wash (control)					
Cold Water					
Warm Water					
Warm Water and Soap					

1. On the next page draw where you saw microbes after hand washing and shaking, for your group only.
2. The method of hand washing (not control) that **removed most** microbes from the lead person was:

   ☐ Cold Water ☐ Warm Water ☐ Warm Water and Soap

3. The method of hand washing (not control) that **removed fewest** microbes from the lead person was:

   ☐ Cold Water ☐ Warm Water ☐ Warm Water and Soap

4. The method of hand washing which **spread the most** microbes along the line was:

   ☐ Cold Water ☐ Warm Water ☐ Warm Water and Soap

5. The method of hand washing which **spread the fewest** microbes along the line was?

   ☐ Cold Water ☐ Warm Water ☐ Warm Water and Soap

6. Draw a graph of how far the microbes spread for all four groups (including control).

My Conclusions

1. What is the best way of getting rid of microbes from our hands?

   _____

2. What difference does using soap make?

   _____

3. When should we wash our hands?

   _____

Fascinating Fact
90% of germs on the hand are found under the nails!

HAND SW 1

Why use soap?

In this experiment you should pretend that the pepper in the bowl is the dirt and germs on your hands. At the end of the experiment can you answer the question

"Why do we use soap to wash our hands?"

Ingredients

- 1 Bowl
- Some water
- A Sprinkle of black pepper
- Hand soap or washing up liquid
- A Towel
- A Pen
- A Notebook
- A Camera (optional)

Method

1. **Half** fill a **bowl** with **water**
2. **Sprinkle** some **pepper** onto the surface of the **water**.
3. **Dip** your finger into the centre of the **water** and **record** what happens to the **pepper**.
4. **Dry** your **hand**, and then dip your **finger** into the **soap**
5. **Dip** your **soapy finger** into the **water**. **Record** what happens to the **pepper**.

Explanation

When you dip your dry finger into the water nothing really happens, you just move the dirt (pepper) around your hands (the bowl). When the soap is on your finger the pepper will move out towards the edges of the bowl. The soap will break up the natural oil on your hands that microbes can stick to. The microbes then get caught up in the soap bubbles and get washed away. Without soap, the oils are not broken down, and microbes find it easier to stick!

Super Sneezes

My Observations

How far did your sneeze travel?

		Student 1	Student 2	Student 3	Student 4	Student 5
Sneeze	Length (cm)					
	Width (cm)					
Sneeze with hand	Length (cm)					
	Width (cm)					
Sneeze with tissue	Length (cm)					
	Width (cm)					

Hand in front of sneeze

1. What did you think would happen when you put the hand over the mouth to sneeze?

   _____

2. What actually happened? (Where and how far did the sneeze travel?)

   _____

Tissue in front of sneeze

3. What did you think would happen when you put the tissue over the mouth to sneeze?

   _____

4. What actually happened? (Where and how far did the sneeze travel?)

   _____

My Conclusions

1. If we don't wash our hands after sneezing into them what might happen?

   _____

2. What should we do with a tissue after sneezing into it?

   _____

3. Which is best for preventing the spread of infection, sneezing into your hand or into a tissue? Why?

   _____

RESP SW 1

How to make
Super Slimy Snot

Sticky, slimy snot in our nose helps to trap microbes and dust. This helps to stop harmful microbes from passing further into our respiratory system and making us ill. If we sneeze or cough, we can spread these microbes to other people. Covering your sneeze with a tissue will catch any droplets of snot and microbes and then you can throw them away with the tissue into a bin. Remember to wash your hands as soon as you can!

Ingredients

- Borax powder (ask an adult to help you with this – it can be brought in the supermarket near the laundry detergent)
- Green food colouring (you will find this in the baking aisle of the supermarket)
- Water
- 2 disposable cups, labelled A and B
- A plastic spoon or stirrer
- A tablespoon

Method

1. Fill **Cup A** with **water,** and add **1 spoonful** of **borax powder** (ask an adult to help you do this). **Stir** to **mix** the **powder** and **water**.
2. In **Cup B**, add about an **inch of glue** to the bottom of the cup, and **mix** with about **3 tablespoons** of **water**. Stir to mix.
3. Add a **few drops** of **green colouring** to **cup B** and stir to mix.
4. Finally, add **1 tablespoon** of **Cup A** to **Cup B,** and watch the green slimy snot form! After about 30 seconds you can play with it!

You can play with the snot, but do not eat it!
It will last a few days if you keep it wrapped up