



Wider Curriculum Unit Plan for Home learning

Subject: Science

Unit: Microbes and medicine

Year: 4

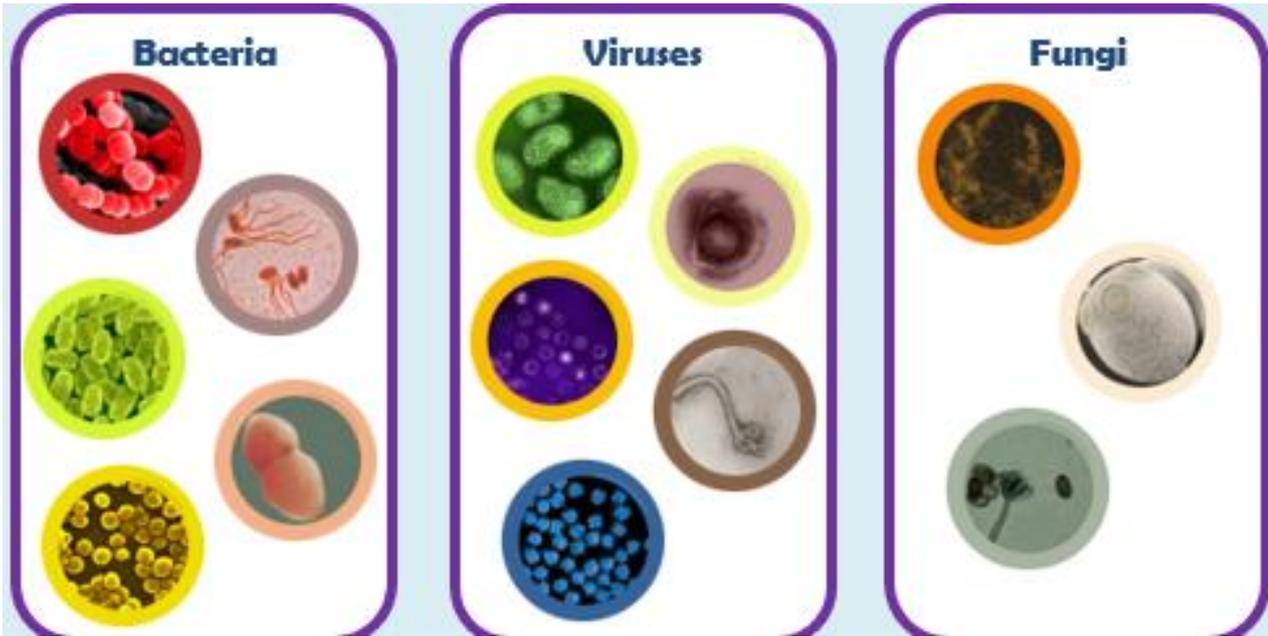
Session 1	<p>What is a microbe?</p> <ul style="list-style-type: none">• Watch this clip of fruit decaying here.• What is happening to the fruit? What is creating this change?• On a whiteboard, create a list of things that you know that are too small to see.• Look at pictures A, B and C in the resources for session 1. These are examples of different microbes. Make a prediction before watching the video to decide which picture you think is a virus, bacteria and fungi.• Watch this video of Professor Hallux's Antibiotics: Episode 1: Types of infection here. This will tell you all about Bacteria, Fungi and Viruses.• In your books, record three facts about each type of microbe you have learnt about today. Make sure to upload this to Seesaw.• Using the pictures in the resources for session 1, draw a picture of your own microbe. You must decide whether it is a Bacteria, Virus or Fungi. Upload this to Seesaw for your teacher to see. <p>Challenge: Are all microbes harmful? Record a short voice note to articulate your understanding about microbes with any examples of useful microbes.</p>
Session 2	<p>What are harmful microbes? See resources to see how to create your own harmful microbes safely!</p> <ul style="list-style-type: none">• Play a game with someone at home. Take it in turns to come up with as many different words for microbes you know- germs, bugs etc.• What makes you ill? Do you know what sort of microbe COVID- 19 is?• Scroll down to the 'Good Germs and Bad Germs' title and watch this video (Start-1 minute 20 seconds). Watch this video (Start-38 seconds)• How do bad germs (microbes) make people ill?• Harmful microbes are spread from person to person. Create a list of ways that harmful microbes can be spread.• Watch this video to show how dangerous a single sneeze can be! Watch this video about how microbes can be spread.• Using all the information you have learnt today create a short presentation to explain all you know about harmful microbes. This could be through a poster, presentation or short movie. Make sure you upload this to Seesaw.• Make sure you have answered these questions:<ul style="list-style-type: none">- What causes an infection?- Are all illnesses caused by microbes?- How are microbes spread?
Session 3	<p>How harmful can microbes be? And what can we do about them?</p> <ul style="list-style-type: none">• Re-watch this video from last lesson. How do microbes spread?• Have a go at the instructions in the resources for session 3 to see how easy it is to spread microbes from person to person• What is the best way of stopping the spread of harmful microbes?• How could your school use these methods to stop the spread of COVID-19?• Watch this video about the exponential growth of harmful bacteria and why it is important to refrigerate things.• Look at the picture in the resources for session 3. Can you spot all the things in the

	<p>picture that could increase the spread of harmful microbes?</p> <ul style="list-style-type: none"> Write an explanation for each thing you have spotted in the picture to explain what the children should be doing and upload to Seesaw.
Session 4	<p>What are useful microbes?</p> <ul style="list-style-type: none"> Watch this video called Misunderstood Microbes. Are all microbes bad and harmful to us? Some microbes are very useful. They can kill other bacteria in food, help us digestive food and by producing foods that we eat in everyday life. Can you think of any foods that you eat that are created by growing microbes? Watch this video of how a microbe known as yeast is used to create bread. You could have a go at this yourself at home. Look at the table in the resources for session 4. Place each of the microbes into whether they are useful, harmful or both. Upload your table to Seesaw for your teacher to see. <p>Challenge: Research what sort of microbe (Bacteria, Virus or Fungi) yeast, a mushroom, yoghurt and a vaccine are and add the information to your table.</p>
Session 5	<p>What are useful microbes? And how can we use them?</p> <ul style="list-style-type: none"> There are many other useful microbes that we use every day. Look through your fridge and cupboard at home and see if you can find any other food products that contain useful microbes. Why should some of these products, like milk and yoghurt, be kept in the fridge? Watch this video and this video on Sir Alexander Fleming. What did Alexander Fleming create? How did Alexander Fleming discover a use for a microbe that led to thousands of lives being saved? Record a voice note, make a presentation or create a poster to explain your findings and upload to share with your teacher. <p>Challenge: Can you find another example of where a microbe has been used to save thousands of lives? Include this in your findings on Seesaw.</p>
Session 6	<p>What is a vaccine? Who was Edward Jenner?</p> <ul style="list-style-type: none"> The science behind the way vaccines work was discovered over 200 years ago. Watch this explanation of what a vaccine is from Operation Ouch (from 3.25 to 9.11) How did vaccines begin? Watch this video about the scientist Edward Jenner and the smallpox disease. How does this compare to how vaccines happen now? Record 3 points in your book. Listen to the resource presentation here about Edward Jenner and vaccines. Answer the questions in the resource for session 6. Look at the enquiry poster of enquiry skills in the resources for session 6. Which skills did Edward Jenner show? Give 3 examples. <p>Challenge: What are some of the reasons people might worry about vaccinations?</p>
Session 7	<p>Who was Louis Pasteur? How does his work change our world today?</p> <ul style="list-style-type: none"> How long can your milk stay fresh? A lot longer because of Louis Pasteur's discovery which we still use today! Watch this video. You may need to watch the video twice as there is a lot of information. The second time you might want to pause to write down key words or questions. Look in your fridge and cupboards to see if you can find any food with 'pasteurised' on the labels. Draw or take photos of them. Research other foods that are usually pasteurised. Were there any surprising ones? Look at the enquiry poster of enquiry skills in the resources for session 7. Which skills did Louis Pasteur show? Give examples for three of the skills. You can choose your own ideas or choose some from the list below.

<p>Session 8</p>	<p>Who was Alice Ball? What was special about her scientific discovery?</p> <ul style="list-style-type: none"> - There are many diseases which there is a cure or treatment but still exist: polio, measles, meningitis. Tuberculosis and leprosy. - Watch this video about Alice Ball and how she discovered the cure for leprosy. - What are 5 things you have learned about Alice Ball, leprosy or the scientific world. - What would you like to say to her professor who claimed Alice's work as his own? - Write a letter to him see example in resource or you may prefer to record a voice note to leave on his voicemail. <p>Challenge: Why are some diseases curable but still in the world?</p>
<p>Session 9</p>	<p>Why are there some diseases which can be cured? How can nature help?</p> <ul style="list-style-type: none"> • Tu You You used ancient Chinese medicine to find a cure • Watch this presentation about how Tu You You found a cure for malaria. • Hundreds of natural medicines come from plants and many have been used for thousands of years. Find out about an old and famous book of plant cures here. • You will find out more about some medicines from nature in this QR code activity! • Complete the matching code quiz to find the plant, its name and its use or remedy as a medicine. See Resources session 9. You will be using the QR code on a phone or tablet camera. • You can check the answers here. • <i>If you do not have a QR code scanner on a phone or tablet, answer section and research more about 3 of the plants here to find out how they help.</i>
<p>Session 10</p>	<p>How do scientists work to develop new treatments?</p> <ul style="list-style-type: none"> • Dr Hyat Sindi has dedicated herself to science to improve lives • Watch this presentation and video about her here. <i>This includes an adult TED talk so don't worry if you don't understand everything, but her story is well worth hearing.</i> - Think about her journey as a scientist. What are the qualities she shows? - How has she been an excellent learner? • What do you think is the most surprising thing she shared? • Record your thoughts about Hayat Sindi in writing or as a voice note or video OR you could write an email or letter to her about how her story has inspired you. • We hope to have a medical visitor this week – we will inform you of the zoom link.
<p>Session 11</p>	<p>Review: How are our lives affected by microbes?</p> <ul style="list-style-type: none"> • You have 2 sessions to complete this review. • Look back on the key questions for this unit and how confidently you can answer these. Write the questions in order of most to least confident. • Create a presentation showing your learning about microbes and medicine and how science of these areas affects our lives. • You could create a video, audio or written presentation. • Focus on your use of scientific language and showing an understanding of the scientific community.
<p>Session 12</p>	<p>Review: How are our lives affected by microbes?</p> <ul style="list-style-type: none"> • Use this session to complete and share your presentation. • Remember to show your use of scientific language and understanding of the scientific community.

Resources

Session 1



Draw your microbe here

This is a picture of my _____

Session 2

Create your own harmful microbes safely!

1. Cut a piece of bread in half! This could be any piece of bread (crusts work perfectly).
2. Pick up one slice of bread as much as possible with unclean hands and place in a Ziplock bag.
3. Wash your hands thoroughly. Put the second half of the bread in a different Ziplock bag, touching as little as possible.
4. Leave the pieces of bread somewhere warm for up to 10 days checking on them every few days. Create a picture diary to document what happens.

DO NOT OPEN THE BAGS ONCE YOU ARE FINISHED

Session 3

Method for how microbes spread

1. Put a drop of lotion on your hands and rub them together to spread the lotion out evenly.
2. With your hands over newspaper, ask your partner to put a pinch of eco-friendly glitter in the palm of one of your hands.
3. With your hands still over the newspaper, make a fist with the hand that has eco-friendly glitter on it, then spread your fingers out. What do you see?
4. Now press the palms of your hands together and pull them apart. What do you notice about your hands?
5. Touch your partner's hand. Now do you see anything on it?
6. Get a paper towel and use it to wipe your hands clean of all the eco-friendly glitter. Is it working?
7. After using the paper towel, try using soap and water to wash your hands. Did the eco-friendly glitter come off?



Session 4

yeast	yoghurt	mould	mushrooms	germs	plankton
bacteria	virus	fungi	antibiotics	penicillin	vaccinations

Helpful	Both	Harmful

Session 6

What is a vaccine?

Who is Edward Jenner? (this is all read in the powerpoint if you want to listen again)



e-Bug

Historic Heroes



Edward Jenner was born in 1749. As a young boy, Edward enjoyed science and nature spending hours on the banks of the River Severn looking for fossils. In 1770, at the age of twenty one, he began training as a doctor in London. Two years later Edward began to practise as a doctor in his home town of Berkeley, Gloucestershire.



During this time, people were terrified of a horrible disease called smallpox. People who got this disease got severe scarring and sometimes even died! As a doctor, Edward Jenner listened to what the country people said about smallpox. They believed that someone who caught a different mild infection called cowpox from their cows would not catch the much more serious smallpox.

Jenner decided to carry out an experiment to see if the people were right. In 1796 a milk maid called Sarah Nelmes came to Jenner complaining of a cowpox rash on her hand. Jenner took some of the pus from the cowpox rash on Sarah's hand. He scratched some of the pus into the hand of an 8 year old boy called James Phipps, the son of his gardener. James fell ill with cowpox but soon recovered.



Jenner then took some pus from someone with the dangerous disease, smallpox, and scratched this into James' arm. James developed a scab but did not develop smallpox, Jenner guessed correctly. Jenner's discovery came to be known as vaccination from the Latin word for a cow: vacca. Jenner went on to vaccinate all the local children with the cowpox to stop them from getting the more dangerous smallpox disease.





Questions about Edward Jenner

Understanding

Answer the following questions:

1. What was the name of the doctor who discovered vaccinations?

2. What was the name of the deadly disease at the time?

3. What was Jenner's idea to stop the deadly disease?

4. What happened to James after he was infected with the cowpox?

5. What happened to James after he was infected with the smallpox?

6. Why was it important for Jenner to test his idea on James before treating lots of children?



Did you know?

By the age of 9, each child may have had at least 9 injections to prevent 10 different dangerous infections.

Fascinating Fact

Vaccination comes from the Latin word for a cow – vacca.



Session 7

Louis Pasteur

He disagreed with most of the scientists working at the time. His ideas were new and not everyone agreed with his new thinking.

He loved solving problems that were affecting people's lives.

He discovered that microbes were responsible for souring alcohol

He studied microbes using a microscope.

He made lots of observations about what he saw.

He told his family to hide his books when he died. Researchers discovered that Pasteur borrowed many of his ideas from other scientists.

He found by giving a weak form of a disease that would make people 'immune' and they would not get the disease.

His research showed that micro-organisms were responsible for spoiling drinks like beer, wine and milk.

Once Pasteur had realized how diseases were caused, he began working on several different vaccines.

In the 19th century, silkworms in France were becoming infected with 2 diseases. He began to conduct experiments to try to figure out what was going on. He saved the silk industry!

Pasteur wasn't very interested in studying when he was a child, he preferred spending time outdoors, as he was interested in fishing and painting.

Science Enquiry



Session 8

Example letter:

Dear Doctor Dean,

I cannot believe what I have discovered today. Is it really true that you have taken the work of the talented young scientist Alice Ball and reported it as your own? As a doctor you will want the best for people and for cures to be found. You knew that such a discovery will make so many people happy. I cannot believe that you would want to cheat like this. I am shocked.

I find it hard to believe reading about Alice 100 years after she died. Why would not give credit to the person who had the ideas and did all the hard work? Did you pretend it was your work because it was all the work of a woman and not a man? Or was it because she was young? Or was it because of the colour of her skin? All of these questions make me sad to think about how many people's work we will never get to hear about.

We are remembering Alice now in 2021. I am so pleased I know of her life.

We still have people suffering from leprosy. So much has been achieved and there is so much more to do. Alice would be proud to know she has become a role model for young women. I hope you would apologise to her now if you could.

Yours,

Kimberley

Science student Year

Session 9

MEDICINAL PLANTS CODE HUNTER

Match the range of medicinal plants with their name and their use/remedy.

Use a mobile or tablet to scan the QR codes to help match the cards. Point the camera at the code and wait for the pop-up link.

NOTE: Do not use these plants yourself – if you are unwell talk to your adult at home and arrange to see a doctor. There are plants which will cause you harm as well as good.



Hollyhock



Garlic



Aloe vera



Arnica



Coffee Senna



Foxglove



Eucalyptus



Asthma plant



Snowdrop



St. Johns Wort



Star anise



Flaxseed



Lemon balm



Elderberry



Clove



Red clover



Bilberry



Ginger



Mouthwash



Antibiotic (kills bacteria)



Heals the skin.



Anti inflammatory (reduces swelling).



Stimulates the immune system (helps to fight off diseases).



Helps the heart to beat in the correct rhythm.



Good for coughs and colds (you never see a koala coughing, do you?).



Good for treating asthma.



Helps to treat Alzheimer's disease.



Good for treating depression.



Good for treating flu.



Good for arthritis.



Helps you to sleep.



Clears up constipation (makes you poo when you're bugged up!).



Helps toothache.



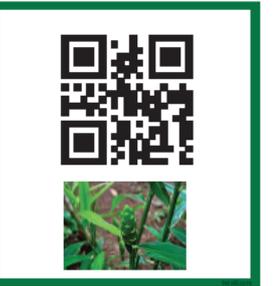
No medicinal use at all but lovely to look at.



Helps to treat scurvy.



Helps stop nausea (feeling sick).



Session 9 CODE ANSWERS

Medicinal Plants Code Hunter Answers

Image	Name	Remedies
	Hollyhock	Mouthwash
	Garlic	Antibiotic (kills bacteria)
	Aloe Vera	Heals the skin.
	Arnica	Anti inflammatory (reduces swelling).
	Coffee Senna	Stimulates the immune system (helps to fight off diseases).
	Foxglove	Helps the heart to beat in the correct rhythm.

Medicinal Plants Code Hunter Answers

Image	Name	Remedies
	Eucalyptus	Good for coughs and colds (you never see a koala coughing, do you?).
	Asthma plant	Good for treating asthma.
	Snowdrop	Helps to treat Alzheimer's disease.
	St. John's Wort	Good for treating depression.
	Star Anise	Good for treating flu.
	Flaxseed	Good for arthritis.

Medicinal Plants Code Hunter Answers

Image	Name	Remedies
	Lemon Balm	Helps you to sleep.
	Elderberry	Clears up constipation (makes you poo when you're bunged up!).
	Clove	Helps toothache.
	Red clover	No medicinal use at all but lovely to look at.
	Bilberry	Helps to treat scurvy.
	Ginger	Helps stop nausea (feeling sick).