

Painted Handshake

LESSON PLAN

RECOMMENDED FOR YEARS 3 - 5

Lesson summary

In this lesson, students learn how quickly germs can spread between people through the act of physical contact, such as handshaking. By the end of this lesson, students will have a better understanding of what germs are and how quickly they can spread.

Learning objectives

Students can explain what germs are and that viruses and bacteria are types of germs.
Students can identify how germs can spread between people.

Possible Australian Curriculum links

Science as a Human Endeavour / Use and influence of science
Maths / Statistics and Probability / Data representation and interpretation

STARTER

1. Ask students to share experiences of feeling sick or unwell e.g. with a cough or a cold. Have them identify how we know if we are feeling sick and list these symptoms.
2. Have students brainstorm why we get sick. Show students some images of bacteria and viruses and ask them to guess which is which and why they believe that (you may need to blow up the images to A3 size or project on an interactive whiteboard for students to be able to see details). Ask students to describe these microscopic images and discuss if they can spot any noticeable differences. For older year groups, you may like to discuss how viruses are a lot smaller than bacteria (the largest of them are smaller than the smallest bacteria!) and have neither a nucleus nor organelles. Bacteria, on the other hand, are complex, single-celled organisms.
3. Discuss the words **germs**, **virus/viruses** and **bacterium/bacteria**. Discuss how viruses and bacteria are just types of germs, which is a catch-all phrase for any microscopic particle that can cause illness in humans.

Resources

- Butchers paper for brainstorm
- Red paint and paintbrush
- Timer
- UV reactive paint and UV lamp (optional)

Health and safety

Care needs to be taken if you are using ultraviolet light for this lesson. Make sure students do not look into the light directly while operating or shine it in another person's eyes.



WOW Lesson!

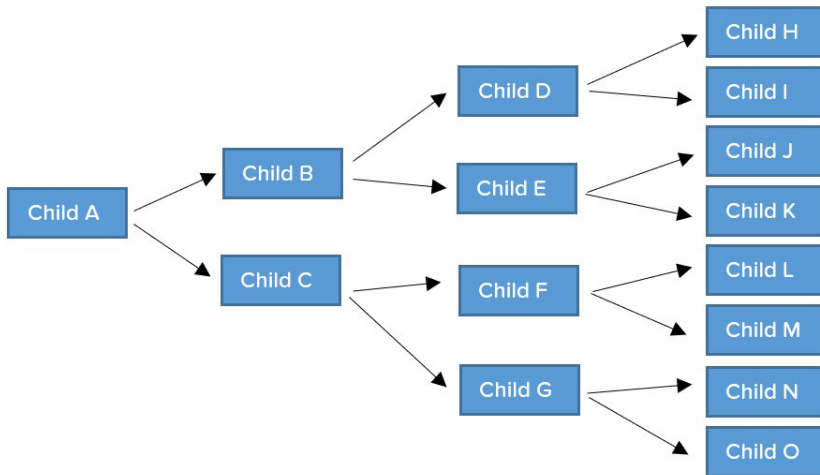
BODY

1. Explain to students we will learn how quickly viruses and bacteria can spread between people. Choose one student (Child A) and put red paint on their hands (make sure you put a generous amount, painting all over the student's palm and fingers). Explain how the red paint represents the germs, which is there because the student has perhaps sneezed or coughed into their hands.
2. Explain to the class that we are going to see how quickly the germs can spread in a class setting and start a timer. Have Child A shake hands with two other students (Child B and Child C), who then individually shake hands with two other students, continuing until everybody has some red paint on their hands.
3. Discuss how quickly that took and ask students to predict how long it would take if each child shook hands with 3 people, 4 people and so forth. You may like to repeat the activity to test out some of these predictions.

Use UV reactive paint or glow-in-the-dark paint to emphasise how germs are invisible to the naked eye. At the end of the handshakes, examine how much paint is on each student's hands using a UV light (you can buy handheld UV torches online). Note that UV light works best in dark environments, so the darker the classroom is, the better this will work.

Challenge

For older year groups, have students record what happened in the form of a tree graph. You could also do this as a whole class activity.



Question prompts

Why do germs spread so quickly?

Where do germs come from and how do they get inside our bodies?

Why do you think germs like to live inside our bodies?

What are some ways we can stop the germs from spreading?

Why is it important to wash your hands with soap and water? When would be the best time to do this?

PLENARY

Play Ring-a-Ring-a-Rosie, but instead of holding hands and skipping, have students pass around a rubber ball which represents the germ. When the song ends, the student who is holding the “germ” sits down and is “out” and the game continues until there is one student left standing. For older year groups, you could have students throw the “germ” across the circle while singing or chanting the song. This time, they are “out” if they drop the ball or do a bad throw. You could introduce more “germs” to be thrown or passed around to add an extra challenge.

DID YOU KNOW?

Ring-a-Ring-a-Rosie is an English nursery rhyme that is believed to have originated from the Great Plague, which is a pandemic that spread throughout England in the 1600’s.

THE SCIENCE BEHIND THE ACTIVITY

The word “germ” is a catch-all phrase that can mean any microscopic particle that can cause illness in humans. The word germ comes from the Latin word *germen*, which means seed and sprout. Early scientists studying germs thought of them as little seeds that spread between organisms.

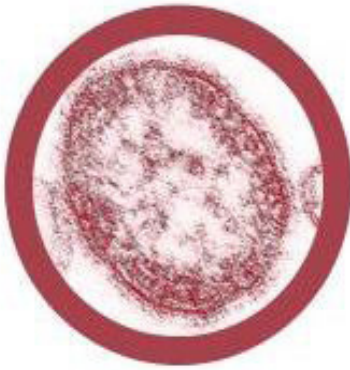
Viruses and bacteria are types of germs, as are certain types of fungi, protists and prions. The difference between a bacterium and a virus is that bacteria can survive inside or outside the body, or on its own. A virus, however, lives inside the cell of a host and multiplies. Without a host, they cannot reproduce.

Vaccines together with improved hygiene have made the biggest impact in reducing infectious diseases around the world. They are responsible for eradicating smallpox and virtually eliminating polio. Measles, diphtheria and whooping cough infections are also at an all-time low thanks to vaccines.

At the Telethon Kids Institute, our researchers at [The Wesfarmers Centre of Vaccines & Infectious Diseases](#) bring together a number of independent researchers and research teams with a common aim; to find and deliver new and improved solutions to prevent and treat serious infections experienced by children or adolescents. To tackle infectious diseases and develop the necessary vaccines, our researchers employ a range of methods, including epidemiological and surveillance projects to monitor infections and risks in populations; laboratory-based projects to understand the mechanisms of disease and vaccine-induced protection; and clinical trials to find the best interventions to improve the health of as many children as possible.

Have you checked out the [Telethon Kids Discovery Centre](#)? Enrich this lesson with an excursion to our interactive Discovery Centre, full of fun games designed to get kids excited about science, health and research. Check out [our website](#) or [send us an email](#) for more information and to book your next school visit!

Microscopic images of viruses and bacteria



**Measles
(Morbillivirus) under a
microscope!**



**Meningitis (Neisseria
meningitidis) under a
microscope!**



**Cough (Bordetella
pertussis) under a
microscope!**



**Tetanus (Clostridium
tetani) under a
microscope!**

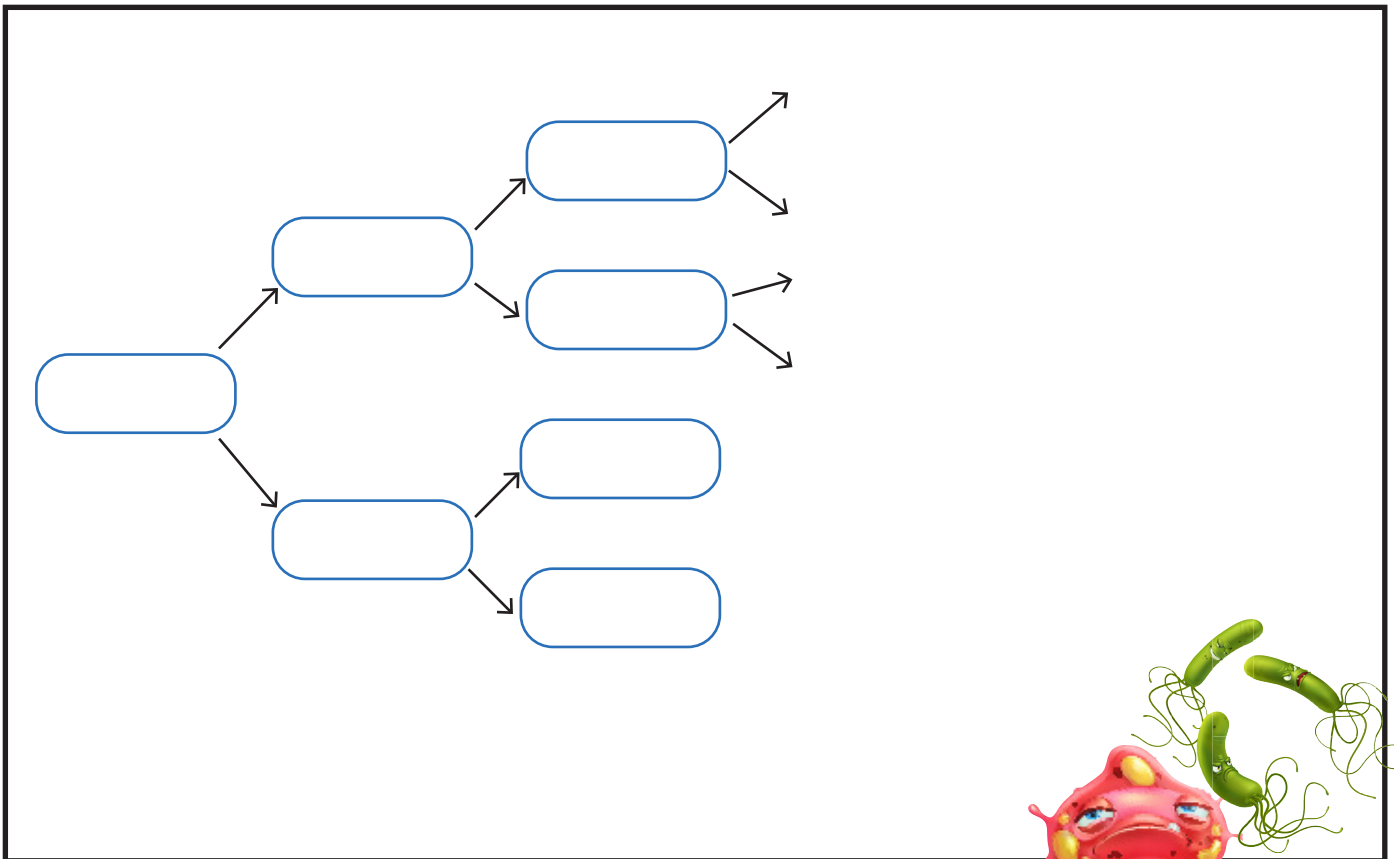
Painted Handshake Activity

Name: _____ Date: _____

What is a germ?

What are the main differences between viruses and bacteria?

Can you record how the germs spread throughout your class using the tree graph below? We have started the graph for you.



How long did it take for the germs to spread to every single person in your class?

Predict how long it would take for the germs to spread if each person shook hands with:

3 people _____

4 people _____