

The Fizz Virus

LESSON PLAN

RECOMMENDED FOR YEARS 5 - 6

Lesson summary

In this lesson, students learn about viruses and bacteria and how they can spread between a group of people. By the end of this lesson, students will have a better understanding of what viruses and bacteria are and explore problem solving strategies for identifying the source of a viral infection.

Learning objectives

Students can explain what viruses and bacteria are, and the differences between them.
Students can identify how viruses can spread between people.

Possible Australian Curriculum links

Science as a Human Endeavour / Use and influence of science
Science Inquiry Skills / Questioning and predicting / Processing and analysing data and information

Preparation

This lesson requires some preparation which you will need to do out of sight of students before class.

1. Take one cup for each student and number each one using a permanent marker (for example, 1 to 30).
2. Choose one cup and make a note of the number on the cup. Fill this cup approximately half full with peroxide. This will be your infected student.
3. Fill the remaining cups approximately half full of water.
4. Prepare a beaker with bleach and a dropper.

Resources

- Plastic cups (1 per student)
- Permanent marker
- Peroxide – you can find hydrogen peroxide at most large supermarkets and pharmacies
- Beaker
- Bleach
- Dropper

Health and safety

Care needs to be taken when students are exchanging the liquids in their cups as hydrogen peroxide could inflame the skin, particularly for those allergic to it. Remind students to walk, not run, as they are moving around the room. Ensure any spills are cleaned up immediately.

Mixing hydrogen peroxide with bleach creates oxygen gas, but typical peroxide and bleach purchased at the supermarket or pharmacy are at low concentrations and shouldn't cause a harmful reaction when mixed. Ensure that all chemicals are stored appropriately away from students at the conclusion of this experiment.

STARTER

1. Discuss viruses and bacteria and what they do to our bodies. Have students identify different types of viruses and bacteria that they know of and discuss each one, identifying the symptoms and how they spread (e.g. influenza, COVID-19, chicken pox). This is a good opportunity to elicit students' knowledge and identify any misconceptions. Ask students why they think viruses and bacteria might like to live inside our bodies.
2. Share with students information about viruses and bacteria. You might like to use the "Bacteria versus Viruses Comprehension Activity" from the [Discovery Centre's Fun for Kids website](#) for this. Using the gathered information and any additional research, have students complete a Venn Diagram in groups or as a whole class to compare and identify the differences and similarities between viruses and bacteria.

BODY

1. Hand out the cups to each student, making a mental note of the student who receives the infected cup. Explain to students one of them is infected with the "Fizz Virus" but we won't find out who until the end of the experiment (hydrogen peroxide should have no smell, which is why it is perfect for this activity).
2. Explain to students that we are going to pretend we are sharing drinks with each other and at the end of the experiment we will see how many students are "infected" by the virus. Ask students to share their predictions and record this on the activity sheet.



3. Have students carefully exchange the fluids in their cup for three rounds with a different student each time, like so:
 - a. Child A carefully pours their entire cup into Child B's cup.
 - b. Child B carefully pours about half the liquid back into Child A's cup.
 - c. Child A and B record that they have exchanged their liquids with each other.
 - d. Repeat for two more rounds.

You might like to direct the exchange, so students are paired up with a different person each time. For odd numbers of students, you could direct a group of three exchanges or introduce a "teacher cup" to the experiment.
4. After students have exchanged three times, ask them to have a seat. Using a dropper, put 2-3 drops of bleach in each student's cup. Ask students to observe and note if their cup "fizzes" in response to the bleach. Identify those infected and record their names on the board (you may find most students want to be infected and may see bubbles even if there aren't any, but the reaction should be observable).
5. Ask students to clean their workstations and dispose their cups carefully now that they contain bleach. The liquids can be safely disposed down the drain.
6. Discuss what happened and have students reflect back to their original predictions in terms of actual number of students infected. Ask students to construct a diagram to try and trace the virus back to the first person infected. Have students write an explanation and use the data gathered to support their hypotheses.

Question prompts

Why do viruses and bacteria spread so quickly?

Why do you think viruses and bacteria like to live inside our bodies? What makes our bodies a good "host"?

What are some ways we can stop viruses and bacteria from spreading?

How can we identify the first person infected by the virus?



PLENARY

Review students' knowledge on viruses and bacteria by asking them to create a quiz using the facts they have learnt. You could have students write down their questions and swap their quiz with a partner. Alternatively, you could ask students to present their quiz to the class in the style of a game show.

THE SCIENCE BEHIND THE ACTIVITY

Bacteria are classified as prokaryotes, which are single-celled organisms with a simple internal structure that lacks a nucleus. They can survive inside or outside the body, or even on its own! Not all bacteria are harmful to our body – the bacteria in our gut, for example, are useful in helping us digest our food. Some bacteria are harmful when they cause an infection. Examples of harmful bacterial infections include ear infection, whooping cough and strep throat.

Viruses live inside the cell of a host and multiply. Without a host, they cannot reproduce and are therefore dormant. Viruses are not living organisms and do not contain nuclei. They are also submicroscopic, being even smaller than the smallest bacteria. When a virus enters our body, it can make us sick. Examples of viral infections include chicken pox, influenza, the common cold and COVID-19.

Vaccines together with improved hygiene have made the biggest impact in reducing infectious diseases around the world. At the Telethon Kids Institute, our researchers at [The Wesfarmers Centre of Vaccines & Infectious Diseases](#) employ a range of methods to tackle infectious diseases affecting kids and develop necessary vaccines, 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!

The Fizz Virus Experiment

Name: _____ Date: _____

What are two infectious diseases that can be caused by a virus?

1. _____
2. _____

One student in your class is infected with the Fizz Virus. You will exchange fluids with three other students, keeping track of every student and the order you exchange.

How many people do you predict will be infected by the end of the activity? Explain how you came up with that number.



We will have three rounds. For each round, you will carefully exchange your fluid with a different person (no repeats).

- a. Person A carefully pours their entire cup into Person B's cup.
- b. Person B carefully pours about half the liquid back.
- c. Write down who you exchanged with in the box next to Round 1.
- d. Repeat for two more rounds.



Round	Student's Name
1	
2	
3	

Were you infected? _____ How many people were infected? _____

Was this close to the number you predicted? Why do you think your number was/was not close?

On the back of this piece of paper or a separate piece of paper, create a diagram that traces the spread of the disease from the person who you think was first infected. Include a written explanation of your prediction.

Bacteria vs Viruses Venn Diagram Activity

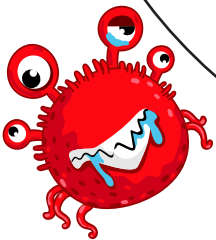
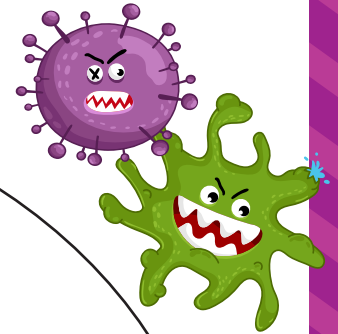
Name: _____

Date: _____

Complete the Venn Diagram below to identify the differences and similarities between viruses and bacteria.

viruses

bacteria

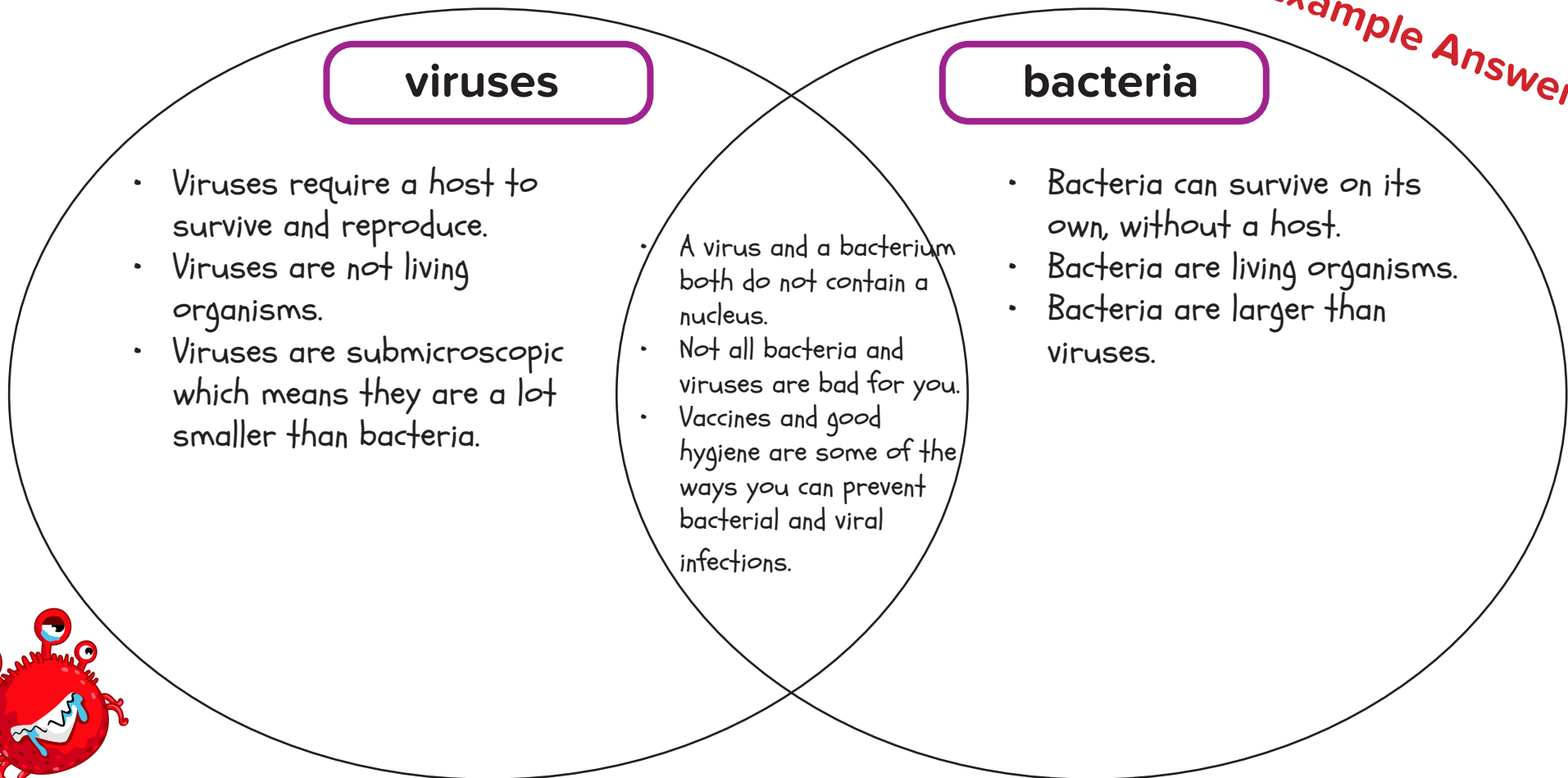


Bacteria vs Viruses Venn Diagram Activity

Name: _____

Date: _____

Complete the Venn Diagram below to identify the differences and similarities between viruses and bacteria.



Example Answers

