

This programme is initiated and funded by Pfizer.

Introduction to the KS2 programme

The World Health Organisation acknowledges that the number of high-threat infectious hazards are on the rise,¹ and that many of these are spreading faster than ever in different regions of the world.² The combination of newly discovered diseases, and the re-emergence of many long-established ones, demands all countries work together and respond appropriately to the potentially fatal threat of infections.²

Infectious diseases all have the potential to impact human beings and the way we live our lives. There are, however, strategies that can be employed by everyone to try and reduce the spread of infections in order to reduce the likelihood of epidemics/pandemics. It is essential therefore that young people are given more guidance around disease prevention, so with this in mind Pfizer has designed an education module to teach KS2 and KS3 children more about viruses and pandemics.

In Pfizer's **Viruses and Pandemics Module**, young people will investigate the tiny world of micro-organisms, discovering the science behind these small living things and the way we can keep ourselves healthy. Through interesting and engaging activities, learners will become confident in understanding viruses and how they cause disease, as well as exploring the different ways infections can be spread and prevented.

The main purpose of this resource is to ensure all young people are clear about their role in preventing the spread of infection in order to prevent a pandemic.

The resources will be part of an online eLearning module which will culminate with a quiz and activities for young people to complete in order to test their learning.

Navigating Pfizer's Viruses and Pandemics Module

The **Viruses and Pandemics Module** is an eLearning resource which can be used at home or within a group learning session. The programme is intended for young people aged between 7-11 (KS2).

Available Resources within the eLearning module:

- KS2 Viruses and Pandemics Module Delivery Notes
- KS2 Viruses and Pandemics Module Presentation and Quiz
- KS2 How My Body Protects Me Activity Sheet
- KS2 Working Together Activity Sheet

Facilitators can use the **Viruses and Pandemics Module** Delivery Notes to guide learners through the eLearning **Viruses and Pandemics Module** Presentation. The content consists of learning objectives and outcomes, a starter, four core activities and a plenary (task to check the learning that has taken place).

Subsequently, learners can undertake a quiz to see what they have learnt from the session. Young people also have the option to complete Activity Sheets from the **Viruses and Pandemics Module** to deepen their learning and understanding. The purpose of these activities sheets is not to produce one single answer, they are however to promote further thinking and to aid extended learning around the topic of viruses and pandemics.

Links to external websites are provided as a resource to the viewer.

The websites are neither owned or controlled by Pfizer Ltd. Pfizer accepts no responsibility for the content or services of the linked sites.

1. <https://www.who.int/activities/preventing-epidemics-and-pandemics> Accessed April 2020
2. <https://www.who.int/emergencies/diseases/managing-epidemics-interactive.pdf> Accessed April 2020



The **Viruses and Pandemics Module** has been designed to link to the national curriculum across all four nations in the United Kingdom. The key terminology, content and activities have been created with the intended key stage in mind, so that adequate progress and learning can take place throughout the module.

Pfizer's Viruses and Pandemics Module learning guide

Learning objective:

Young people will be learning about how some micro-organisms can cause humans to be unwell. Learners will explore the impact that these micro-organisms, specifically viruses, can have on the world, and what people can do to keep each other safe.

Learning outcomes:

- I can **identify** the different types of micro-organism.
- I can **recall** the structure of a virus.
- I can **explain** how a virus can make us feel unwell.
- I can **describe** the ways people can prevent spreading infections.
- I can **compare** the difference between an epidemic and a pandemic.

Introduce the session

Young people will be exploring the health impacts of micro-organisms on human beings and communities all over the world. Before beginning, it is important to highlight that this is a challenging topic with real life implications on a global scale, therefore it is important to respect the content within the presentation and ensure that all learners feel comfortable with covering the content within this module. It would be advised that a safe learning environment is created prior starting the session, establishing ground rules that will enable fair discussion and sharing of facts and opinions. Some examples of ground rules could be:

'I will respect the ideas and opinions of other people.'

'I will not interrupt someone when they are sharing an opinion.'

'I will not force anyone to speak if they do not wish to.'

Starter

Task:

- Explore slides **1-3** of the **KS2 Viruses and Pandemics Module** Presentation.
- Introduce the outcomes of the session, explaining that these will be revisited at the end.
- Ask learners to define the meaning of a micro-organism.
- Ensure young people understand that a virus is a micro-organism.

Instructional Notes: Encourage learners to write/spell/verbally say the word micro-organism. The definition can be repeated verbally, or learners can be instructed to write it down on paper.

Core Activity 1

Task:

- Explore slides **4-5** of the **KS2 Viruses and Pandemics Module** Presentation.
- Read the information about each type of micro-organism.
- Ask learners to try and match up the micro-organism to the picture and example disease.
- Explain to young people that micro-organisms can be both good and bad for our bodies.

Instructional Notes: Encourage learners to try and read the information from the Presentation aloud so that they can get used to verbally saying key science terminology.



Support: If some learners struggle to say/spell/understand some of the key vocabulary, direct learners to the glossary in the delivery notes for additional support.

Extension: For additional challenge learners could try and research what the word 'pathogen' means. (The answer is that it is a micro-organism that is harmful and causes a disease).

Core Activity 2

Task:

- Explore slides **6-8** of the **KS2 Viruses and Pandemics Module** Presentation.
- Introduce young people to the simple structure of a virus. Explain to learners how viruses can make people unwell if they manage to get into people's bloodstream and our body cells.
- Ask learners to take it in turns to read aloud some of the interesting fun facts about viruses from the presentation.
- Ask learners to write three new facts they have learnt about viruses.

Instructional Notes: Size is very important when it comes to cells and micro-organisms. Viruses are so small they can easily fit inside a cell; therefore, it is important to highlight to young people that viruses are much smaller than cells.

Support: Some students may not know what protein or DNA (Deoxyribonucleic acid) is when looking at the structure of a virus. For these students direct them to the glossary in the delivery notes as well as focus on the appearance of the virus rather than remembering all the labels.

Extension: For additional challenge ask learners to try and find some more fun facts about viruses.

Core Activity 3

Task:

- Explore slides **9-10** of the **KS2 Viruses and Pandemics Module** Presentation.
- Ask pupils to listen or make notes while being introduced to the different ways the human body can protect us from viruses entering.
- Introduce young people to the ways in which viruses can be transmitted from person to person and the meaning of infectious.
- Ask learners to draw a picture for each way diseases can be transmitted.

Instructional Notes: If equipment and time permits, learners may wish to try and find some of their own fun facts about viruses and other micro-organisms.

Support: If young people are not confident in reading aloud, deliverer can read the information and then encourage learners to repeat.

Extension: For additional challenge ask learners to work in pairs and 'act-out'/role play/mime a type of disease transmission to see if the other person can guess what it is. Take it in turns to test each other.

Core Activity 4

Task:

- Explore slides **11-12** of the **KS2 Viruses and Pandemics Module** Presentation.
- Introduce to learners the meaning of pandemic and why they can be problematic.
- Explain to young people how there is an increased risk of pandemics if we do not reduce the transmission of diseases.
- Introduce content to learners about the different ways in which people can reduce the spread of viral diseases.
- Invite young people to create a slogan to promote the ways in which young people can prevent pandemics in the future.

Instructional Notes: Communicate to young people that pandemics are very serious as they potentially can cause fatalities to people across the world. It is important that people try very hard not to spread pathogens, like viruses, to stop people getting diseases.



Support: Direct young people to the glossary in the delivery notes if they struggle with any key vocabulary.

Extension: For additional challenge learners could research a pandemic. Finding out what year it took place and how people were affected.

Plenary – checking the learning

Task:

- Explore slides 13-15 of the **KS2 Viruses and Pandemics Module** Presentation.
- Ask learners to summarise what they have learnt in the session by creating a ‘clean hands’ diagram.
- Provide additional time for any final questions/discussions.
- Revisit learning outcomes to ensure learning has taken place during the session.

Instructional Notes: To create the clean hands diagram, ask learners to use a pencil to draw round both their hands on a piece of paper. In each finger they try and write a fact they have learnt from the session. Then ask young people to decorate their hands with coloured pencils/pens, which can then be displayed around the house.

Quiz

Learners can receive a **Viruses and Pandemics** certificate once they complete the online quiz; a small test to check understanding and progress during the eLearning module.

Activity Sheets:

How My Body Protects Me Activity Sheet.

Instructional Notes: Before learners undertake the **How My Body Protects Me** Activity Sheet, remove information from the screen so learners have to remember the information from memory.

Support: If some learners struggle to remember key points to complete the activity sheet, make the information visible again from the eLearning module to support these individuals.

Working Together Activity Sheet.

Instructional Notes: It is important to communicate to young people that trying to reduce chances of pandemics and epidemics requires lots of people working together. People individually can do lots of things on their own to help, however it is vital that we communicate and share prevention methods with as many people as possible in order to make the greatest impact.

Support: Direct young people to the glossary in the delivery notes if they struggle with any key vocabulary.

Optional Activities for further learning:

Learners can extend their learning by choosing between one or more of these activities:

- Speak to a family member or friend and ask them what they do to prevent viruses spreading.
- Create your own song or poem to highlight what people can do to reduce the spread of infectious diseases.
- Watch the news or a TV programme with your family which will provide further information on pandemics and diseases.

Curriculum Links

England³

- Learners should learn how to keep their bodies healthy.
- Learners should describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms.
- Learners should describe the importance for humans for good hygiene.

Scotland⁴

- I can talk about science stories to develop my understanding of science and the world around me. (SCN 0-20a).
- I have observed living things in the environment over time and am becoming aware of how they depend on each other. (SCN 0-01a).

Wales⁵

- Learners should be taught to relate their scientific skills, knowledge and understanding to applications of science in everyday life, including current issues.
- Learners should understand the interdependence of living organisms.

Northern Ireland⁶

- How living things rely on each other within the natural world.
- How change is a feature of the human and natural world and may have consequences for our lives and the world around us; The effects of positive and negative changes globally and how we contribute to some of these changes.

Glossary⁷

Antivirals: Medicine effective against viruses.

Bacteria: A member of a large group of unicellular microorganisms, including some that can cause disease.

Blood: The red liquid that circulates in the arteries and veins of humans and other vertebrate animals, carrying oxygen to and carbon dioxide from the tissues of the body.

Cell: The smallest structural and functional unit of an organism, which is typically microscopic and consists of cytoplasm and a nucleus enclosed in a membrane.

Chickenpox: An infectious disease causing a mild fever and a rash of itchy inflamed pimples which turn to blisters and then loose scabs. It is caused by the varicella zoster virus and mainly affects children.

Chemical: A distinct substance that is naturally occurring, or sometimes made by people.

Coronavirus: A group of viruses that cause a variety of diseases in humans and other animals.

Common cold: A common infection in which the mucous membrane of the nose and throat becomes inflamed, typically causing running at the nose, sneezing, and a sore throat.

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3. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/425618/PRIMARY_national_curriculum_-_Science.pdf Accessed March 2020
4. <https://education.gov.scot/Documents/sciences-eo.pdf> Accessed March 2020
5. <https://hwb.gov.wales/storage/779c7300-574d-4a12-a518-c873557d6a7a/science-in-the-national-curriculum.pdf> Accessed March 2020
6. <https://cceq.org.uk/downloads/docs/cceq-asset/Curriculum/Key%20Stage%202%20Statutory%20Requirements%20for%20The%20World%20Around.pdf> Accessed March 2020
7. https://www.lexico.com/?search_filter=dictionary Accessed April 2020

Glossary Continued^{7,8,9}

Compare: Point out or describe the resemblances with; liken to.

Disease: A disorder of structure or function in an organism that produce specific symptoms and is not simply a direct result of physical injury.

DNA: Deoxyribonucleic acid, a self-replicating material which is present in nearly all living organisms.

Epidemic: Is when an unusually high number of people in one place all have the same infection.

Explain: Make (an idea or situation) clear to someone by describing it in more detail or revealing relevant facts.

Fungi: Any of a group of spore-producing organisms feeding on organic matter, including moulds, yeast, mushrooms, and toadstools.

Germs: A microorganism, especially one which causes disease.

Identify: Establish or indicate who or what (someone or something) is.

Immune System: The organs and processes of the body that provide resistance to infection and toxins.

Infect: Affect (a person, organism, etc.) with a disease-causing organism.

Infectious: (diseases) are caused when certain micro-organisms, such as viruses, enter the body and cause problems. Some, but not all, infectious diseases can be spread from person to person.

Medicine: A drug or other preparation for the treatment or prevention of disease.

Micro-organisms: A microscopic organism, especially a bacterium, virus, or fungus.

Organism: An individual animal, plant, or single-celled life form.

Pandemic: the spread of a disease all over the world.

Poison: A substance that is capable of causing the illness or death of a living organism when introduced or absorbed.

Protein: Any compounds containing Nitrogen and Carbon, which have large molecules composed of one or more long chains of amino acids and are an essential part of all living organisms.

Protist: A single-celled organism of the kingdom Protista, such as alga.

Recall: Bring (a fact, event, or situation) back into one's mind; remember.

Reproduce: (of an organism) produce offspring by a sexual or asexual process.

Scab: A dry, rough protective crust that forms over a cut or wound during healing.

Skin: The thin layer of tissue forming the natural outer covering of the body of a person or animal.

Stomach: The internal organ that plays a major role in digestion.

Transmission: The action or process of passing something.

Virus: An infective agent that typically consists of a nucleic acid molecule in a protein coat, is too small to be seen by light microscopy, and is able to multiply only within the living cells of an organism.

White Blood Cell: A cell which circulates in the blood and body fluids and is involved in counteracting foreign substances and disease.

WHO (World Health Organisation): An agency of the United Nations, established in 1948 to promote health and control of communicable diseases. It assists in the efforts of member governments, and pursues biomedical research through some 500 collaborating research centres throughout the world. Its headquarters are in Geneva.

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7. https://www.lexico.com/?search_filter=dictionary Accessed May 2020

8. <https://www.who.int/hac/about/definitions/en/> Accessed May 2020

9. https://www.who.int/csr/disease/swineflu/frequently_asked_questions/about_disease/en/ Accessed May 2020