

Science of Vaccinations

This booklet will provide you with a series of engaging lessons to support you in navigating the complex and emotive topic of vaccinations.

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Introduction

Dear colleague,

Within this booklet, you will find a series of lessons that support you in navigating the complex and emotive topic of vaccinations. These lessons will help children understand what vaccines are, how they work, and how to find information about them from reputable and sensible sources.

This topic is statutory in all maintained schools, under the Health Education section of the Relationships Education, Relationships and Sex Education (RSE) and Health Education curriculum. It is exempt from parents' right to withdraw their children, as it falls under Health and not RSE. Within the guidance for these subjects, the DfE notes:

*'To embrace the challenges of creating a happy and successful adult life, pupils need knowledge that will enable them to make informed decisions about their wellbeing, health and relationships and to build their self-efficacy'*¹

And that

*'Where topics and issues [...] are likely to be encountered by pupils online, schools should take this into account when planning how to support them in distinguishing between different types of online content and making well-founded decisions [...] In this guidance where topics occur equally on and offline they are accommodated in the core content under the most applicable theme with the assumption that teachers will deliver them in a way that reflects that pupils will be negotiating issues and opportunities in these areas in all contexts, including online'*²

Talking about vaccinations in the classroom is something that many teachers feel some level of anxiety about. This is perfectly natural. However, it is important to remember that your role in this, as in all things within the classroom, is – as the DfE themselves make clear, in the quotations above – to provide children with the knowledge and skills to enable them to make informed decisions and distinguish between different types of content, both on and offline. Personal beliefs and opinions ought not to enter into it. Our role, as educators, is to give children the tools to navigate complex situations themselves, not to tell them how to do it. This is something we are used to with other topics, such as Relationships and Sex Education, so you probably already have some ground rules set up for those topics, in order to establish a safe learning

environment for the children to have complex, mature and emotive discussions. We would strongly suggest you do the same for this topic.

As an example, we suggest the following guidelines would be useful for when you are discussing vaccinations with your classes:

1. Your own **vaccination status is private**, as is that of every other person in the school, and their families'. It is not relevant to either what a vaccine is, how it works or how to find reliable information about vaccines, which is the focus of these lessons. Therefore, children should be encouraged not to ask personal questions about others' vaccination statuses – or, indeed, any other personal questions.
2. Leave yourself the option to 'park the question'. If necessary, it is perfectly acceptable to explain to children that the question goes beyond the lesson's learning outcome, so we'll come back to it.
3. Ensure that you give children options for where to go to talk about how they feel about this topic. Many children still have anxiety around the pandemic, which could be triggered by conversations about vaccinations. This could be in-school support, for example, an anonymous '**worry post box**' for children to use, which is regularly checked. Alternatively, it could be signposting children to resources such as Childline, or Young Minds.
4. Distance the learning. Keep it hypothetical as far as possible.
5. Be inclusive. Inclusivity can mean a range of different things in this context, for example, forewarning pupils you know are vulnerable, e.g. those with known health anxiety or health conditions. It could mean checking in with vulnerable pupils after the lesson, or having an additional adult on hand to support them during the class. It could also mean using careful, inclusive language to ensure that any pupils whose parents have strong views on vaccinations (either positive or negative) feel comfortable with the lesson content.

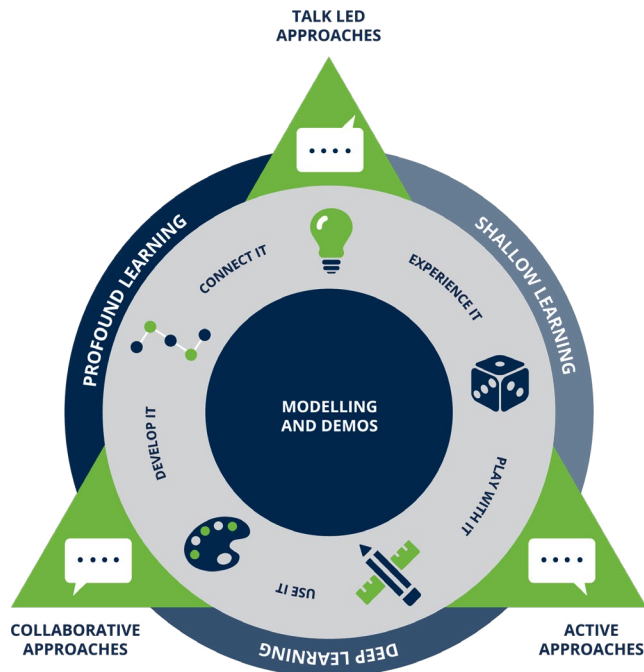
We are confident that you will find the lessons in this booklet supportive, inclusive and informative. Should you require any further information, you will find a series of helpful websites at the end of this booklet.

¹ from DfE's publication: 'Relationships Education, Relationships and Sex Education (RSE) and Health Education' Statutory guidance for governing bodies, proprietor, head teachers, principals, senior leadership teams and teachers) p 8

² from DfE's publication: 'Relationships Education, Relationships and Sex Education (RSE) and Health Education' Statutory guidance for governing bodies, proprietor, head teachers, principals, senior leadership teams and teachers) p 9

The Path to Success

The Path to Success is a simple pedagogical approach that we, at TT Education, use throughout our training. This is how it works:



Stage 1: Experience it

Children need rich experiences which they can relate to in order to support them in developing a particular skill set. For example, how can you expect a child to relate to a scientific principle if they have never really recognised science at work in any type of meaningful context? The challenge for us as teachers is to find a way to replicate this meaningful experience and practical application in the classroom. In the case of vaccinations, children will probably have some experience of having heard about the more recent vaccine rollouts, and/or vaccinations they themselves have received. Some experiences may be positive and some may be negative. Providing children with a shared experience that is neutral – purely objective and discursive – may help them to view vaccinations with a scientific eye, rather than emotionally.

Stage 2: Play with it

This, in a sense, refers to the Gamification of Learning. The power of playing short burst games to practice key skills on a daily basis should not be underestimated. Not only do they act as hook to excite, engage and challenge the children but they also support children in developing fluency in a particular skill: procedural efficiency alongside conceptual understanding.

Spending time on playing with the concept of vaccinations, to get a fuller understanding of how they work, is a very valuable exercise.

Stage 3: Use it

Once children have experienced a particular skill and had an opportunity to play with it in order to fully assimilate the technique, they then move onto use it in context. Practical application in context is key to successful outcomes for children. Using their skills to consider, for example, where might be the best place from which to get reliable information about vaccinations, gives children ownership over the concept.

Stage 4: Develop it

Children continue to develop the skill/knowledge in context. It is absolutely crucial that all adults within the classroom and within the school at large position themselves alongside the children as learners, actively engaging in the learning process. High-quality modelling and demonstration should be underpinned by an active, talk-led, collaborative learning climate, in which children move from learners to teachers. If a child can confidently demonstrate the level of understanding necessary for them to be able to explain and teach a concept, idea or approach to another child, then in doing so they are demonstrating that their initial learning has been internalised and embedded. Perhaps the children could produce a teaching tool for younger children about the science of vaccines, or even go into KS1 classrooms to share their learning.

Stage 5: Connect it

This refers to children making connections across the curriculum. With a deeper understanding, children will begin to make links and connections in terms of how they could apply the skill or concept they have just learnt across the curriculum and in the wider world. Making these connections and exploring possible connections moves the child from deep learning into profound learning, which will stay with them forever. Perhaps children could use their knowledge of where to find reliable information to research a different topic. Perhaps they could connect their scientific learning in this topic to their understanding of the human body in science.

This circular approach then repeats as new skills, concepts and ideas are added. This whole approach is underpinned by talk-led, active and collaborative approaches, which provide the **foundation for success**.

Year 5 Vaccinations

Each lesson is aimed to be able to be taught within approximately 45 minutes and should follow the order written.

Curriculum links

Lesson	Science	Relationship, RSE and Health Curriculum
How our bodies work – immune systems	<p>Working scientifically: Draw on other evidence to inform their predictions (e.g. own experience, reading, media).</p> <p>Asking relevant questions and using different types of scientific enquiries to answer them.</p> <p>Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.</p>	<p>Physical and Mental Health: How to recognise early signs of physical illness.</p> <p>About personal hygiene and germs including bacteria, viruses, how they are spread and treated, and the importance of handwashing.</p>
History of vaccines	<p>Working scientifically: Asking relevant questions and using different types of scientific enquiries to answer them.</p> <p>Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.</p>	<p>Physical and Mental Health: The facts and science relating to allergies, immunisation and vaccination.</p> <p>About personal hygiene and germs including bacteria, viruses, how they are spread and treated, and the importance of handwashing.</p>
What is a vaccine?	<p>Working scientifically: Asking relevant questions and using different types of scientific enquiries to answer them</p> <p>Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions</p>	<p>Physical and Mental Health: The facts and science relating to allergies, immunisation and vaccination.</p> <p>About personal hygiene and germs including bacteria, viruses, how they are spread and treated, and the importance of handwashing.</p>
Fake News #1	<p>Research: Select, organise and use</p>	<p>Physical and Mental Health: That the internet can be a</p>

information from more than one source to construct an informed response and/or opinion.

Explain the usefulness and reliability of different sources.

negative place where online abuse, trolling, bullying and harassment can take place, which can have a negative impact on mental health.

How to be a discerning consumer of information online.

Relationships:

The rules and principles for keeping safe online, how to recognise risks, harmful content and contact, and how to report them.

How to critically consider their online friendships and sources of information including awareness of the risks associated with people they have never met.

How information and data is shared and used online.

Fake news #2

Research:

Select, organise and use information from more than one source to construct an informed response and/or opinion.

Explain the usefulness and reliability of different sources.

Physical and Mental Health:

That the internet can be a negative place where online abuse, trolling, bullying and harassment can take place, which can have a negative impact on mental health.

How to be a discerning consumer of information online.

Relationships:

The rules and principles for keeping safe online, how to recognise risks, harmful content and contact, and how to report them.

How to critically consider their online friendships and sources of information including awareness of the risks associated with people they have never met.

How information and data is shared and used online.

Lesson 1: How our bodies work – immune systems

Key vocabulary: immune system, antibody, pathogens, antigens, microbes.

Introduction

In our environments there are micro-organisms (microbes). There are three types of microbes: bacteria, viruses and fungi. Microbes live on every surface in the world, including in our homes, school, food and even on our bodies. Microbes can be known by different terms including germs and bugs.

Some microbes can be harmful to us and can make us sick. Other microbes are not harmful. Examples of harmful microbes can include influenza, campylobacter (which can cause food poisoning) and dermatophyte fungi such as athlete's foot.

Exploring microbe growth conditions: investigation

What foods have children seen mould grow on? Can they think of any conditions that might help mould to grow? What about where food is stored?

Get children to suggest an investigation using bread to explore the best conditions for microbes (mould) to grow in. Where might they put them to test where the mould might grow the best? How will they keep the conditions fair?

Pupils to predict, plan and evaluate the investigation.

Suggestions:

Three bagged pieces of bread: 1 in a dark place with some water in it, 1 in a sunny place and 1 in the fridge. Leave for the week and allow children to observe the differences.



The bags containing the bread and mould should be **securely sealed and taped!**

How do harmful microbes affect us?

If harmful microbes are able to get inside our bodies and replicate, then this can cause an infection and we become ill.

Can the children recall being ill or when they were told they had a germ or bug? What symptoms can they recall, e.g. influenza (flu) – temperature, tiredness, headache, food poisoning vomiting, stomach ache.

The good news! Our body is extremely clever at trying to fight off diseases and illnesses caused by harmful microbes and has several layers of defence.

Do children know what these could be?

Show a picture of the human body and see if children can identify the defence mechanisms that we have.

The skin

Our skin is the largest organ of the body. It forms a barrier to stop germs, bacteria and other microbes from entering the body, unless our skin becomes broken.

The respiratory system

We have hairs called 'cilia' in our nose and airway to stop microbes from entering the body. The hairs act by catching the microbes as they pass through our respiratory system.

Bacteria busting enzymes

Our tears, saliva (in our mouth) and mucus (in our nose) contain enzymes which help to break down and destroy bacteria.

What is the function of the immune system?

Not only do we have defence mechanisms on the outside, but we have an internal defence mechanism too.

Provide pupils with the opportunity for children to brainstorm ideas that they know about 'immune' or 'immune system'. This will help to support understanding of what the children's prior knowledge or experiences are.

When someone encounters a harmful germ or virus which passes into our bodies, it attacks our cells and can cause disease or even death. However, the body has a way to try to defend itself against pathogens (microbes that make us sick). When a pathogen is detected, the body's defence mechanism – our immune system – detects it and fights to attack and destroy the pathogen. When these invaders are in our bodies, they are known as antigens.

Although we have this great immune system in place, we can still help it by ensuring we wash our hands regularly, get plenty of sleep, exercise and eat healthily.

Check in questions:

- What causes an infection?
- Are all types of microbes harmless?
- Can the children identify any infections caused by harmful microbes?

- How does our body try to prevent harmful microbes from getting in to our systems?

Activities for pupils to explore and talk about their understanding of our immune system

- Draw a superhero poster or a cartoon strip – describing how our bodies defences protect us from harmful bacteria.
- Use craft materials to create the immune systems and the different parts to show their understanding.
- Watch this short video (approx' 5 minutes) available on YouTube from TED Ed <https://www.youtube.com/watch?v=PSRJfaAYkW4>

Other videos are also available via video streaming platforms.



Session 2: The History of Vaccines

Key vocabulary: immune, immune system, antibody, pathogens, antigens, microbes.

Introduction: In this lesson, pupils will explore the history and chronology of vaccines, noting in particular how long ago the practice dates back to.

Throughout history, humans have successfully developed a range of vaccines to protect people against harmful and life threatening microbes.

Can children recall the names of any infections discussed in the last session?

Can they identify any other infections (such as measles, smallpox, coronavirus, tonsillitis (often virus) etc.)?

Often we think of vaccines starting with a British physician called Edward Jenner (1788 – 1815) but in fact the story of vaccines did not begin there. Evidence exists that as early as 1000CE, China and India were reported to be using vaccinations to treat smallpox. These practices later spread to Africa, Turkey, Europe and the Americas. In the 1650s an account stated that Chinese Emperor K'ang Hsi, who had survived smallpox as a child and went on

to have children vaccinated. The vaccination (known at this time as 'variolation') itself is nothing like what we know them to be today. The reports suggest that smallpox scabs were ground up to dust and blown in to the nostril or scratched on to a small part of the skin.

Timeline of vaccines (see resource 1)

The middle of the 20th century was a particularly active time for vaccine research and development with new methods for growing viruses in the laboratories leading to rapid discoveries and innovations. Researchers targeted common childhood diseases such as measles, mumps, rubella and polio, with vaccines which greatly reduced the transmission of the diseases. More recently, innovative techniques have been able to be developed and scientists are now looking at vaccine research for non-infectious diseases and conditions such as allergies and addictions.



Allow children to explore key figures such as Edward Jenner and Louis Pasteur

Sources of information: <https://www.jenner.ac.uk/about/edward-jenner>, <https://www.bbc.co.uk/teach/class-clips-video/true-stories-edward-jenner/zm8fcqt> and <https://www.pasteur.fr/en/institut-pasteur/history>

NB: the BBC clip notes that there are some scenes that children may find upsetting. Teacher review is recommended prior to use.

Discussion topics:

What do you think of how vaccines have developed over time and the role of science and technology?

As vaccines have developed, so have the guidelines for their research including the protection of humans. What are your thoughts on Jenner using an 8 year old child, James Phipps, in his first vaccination trial?

We know that the child, James Phipps, did not volunteer himself, but was volunteered by his father, a gardener (employee) of Edward Jenner's. What are your thoughts in Jenner using the son of a poor employee?

Vaccines have developed with the pace of technology and our understanding of the world and human body.

If Jenner were to conduct this trial today, he would not be able to use children as trial subjects. There are now rules around medical testing including vaccines.

Scientific technologies were not as advanced in being able to identify changes e.g. at a cellular level as they are now with modern microscopes, DNA etc. Did Jenner have other ways he could have trialled his idea?

Independent activity

- Children to design a fact file about the history of vaccinations or one of the figures studied.



Lesson 3 – What is a vaccine?

Key vocabulary: pathogen, vaccine, vaccination, antibodies, immunization, immune, immunity, antigen.

Introduction: In the last session we looked at the history of vaccines, this session will focus more on understanding what a vaccine is.

Recall prior learning about the immune system and history of vaccines. What can children recall?

Pupils to have a go at the **Vaccination Quiz (see Resource 2)**.

When a harmful microbe (pathogens such as viruses and bacteria) enters our immune system, our immune system:

- Recognises the pathogen as being foreign (not belonging to the body)
- Responds by making antibodies that help to destroy the pathogen.
- Sometimes cannot react as fast as the pathogen, so we might become a little bit ill until our immune system has destroyed the pathogens.
- Remembers the pathogen that made us ill and can destroy it next time. That way, the next time the pathogen infects our immune system, it can work more quickly to prevent us from becoming as ill.

A vaccine triggers the same response in your immune system. Most vaccines are designed to fight viruses.

How Do Vaccinations Work?

Vaccines contain weakened or inactive parts of a particular organism (antigen) that triggers an immune response within the body. As science has improved and become more technological, newer vaccines do not contain the organism itself, but rather a blueprint for producing the antigen. This weakened version will not cause the disease in the person receiving the vaccine, but it will prompt their immune system to respond much as it would have on its first reaction to the actual pathogen.

The vaccine is enough that our bodies can learn to build specific antibodies to fight off the pathogen. Some vaccines require multiple doses. These are often given weeks or months apart. This is sometimes needed for the production of long-lived antibodies and development of memory cells. This means that the body is trained to fight the specific disease-causing organism, and build up a memory of the pathogen so it can rapidly fight it if it encounters it again in the future. This can lead to us developing immunity after having a vaccine. You might still be exposed to the infection, but you are unlikely to become infected.

Vaccines can also protect those around you. Some people, who might have particular illnesses, may not be able to be vaccinated (such as cancer or HIV or those who may be severely allergic to ingredients in vaccines.) However, if these people live in house with others, they can still gain some protection, where others in the household have had a vaccine.

Activity – exploring how vaccines work

Resources needed: *plastic containers, tweezers, 3 or 4 different types of pasta which are different sizes and shapes e.g. macaroni, broken up spaghetti, fusilli. You could add in small plasticine or play clay balls too!*

Place different types of pasta shapes into a box or container to represent different pathogens in the immune system.

Using the tweezers - how many can they remove in 30 seconds with their eyes closed?

Discuss with partners how easy this was. Why was it tricky?

Make the link to real life context. When a pathogen enters our bodies, our immune systems do not recognise it at first, so it cannot act as quickly to target them. Our immune systems produce antibodies for each specific pathogen and this takes our bodies time. Repeat the activity but the next time, children can keep their eyes open. Discuss the difference between the first and second time. Why was the second time easier?

Make the link between how a vaccine works. A vaccine acts as a practice go – identifying the pathogen the first time around and creating the antibodies to fight it. If the same pathogen then enters our immune system again, our antibodies are ready to go! We are better prepared to fight the infection because our immune system knows what it is looking for!

For added fun – try putting the different pasta shapes in slime!



Session 4 - Fake news and misinformation #1

Key vocabulary: fake news, misinformation, disinformation, consumer.

Introduction: Show the children a range of headlines. Encourage the children to decide which are fake and which are real (**resource 3**).

Discuss pupils' responses. How easy was it to identify the fake or true headlines? How did they decide which to choose?

Did you have enough information to make an informed decision?

Why are we talking about this?

Discuss the term 'fake news' and what children understand or know about this term.

Fake news is false, inaccurate information which is purposefully spread. Often fake news is used for a political or commercial purpose using digital technology - social media and news networks can go viral, to reach around the world and influence millions of people very quickly. Fake news is sensationalist, exaggerated and often false information, circulated to increase readership and revenue.

Some other news may be misleading, in that particular headlines or language might be used to grab attention. The difference is that there are usually accuracies to the story itself.

History of 'fake news' – propaganda (examples)

Fake news, although a new term, is not a new action. Throughout history propaganda has been used to try to influence people. Some examples include:

- 44BC –** Caesar Octavian started a smear campaign against Mark Anthony. Slogans about Mark Anthony were etched on to coins and distributed.
- 1450 –** Gutenberg Press. As news began to be circulated more widely with the invention of machines, fake news stories started.
- 1700s –** A series of publications (newspapers/leaflets)

claimed that the English King was ill or corrupt, to try to get the British people to support the Stuart family in taking over the throne during the Jacobite rebellion.

1835 – An American newspaper, The New York Sun, printed an article claiming the discovery of life on Mars.

1914 – World War 1 - The 'Your country needs you' slogan was heralded as a great piece of propaganda in gaining support for the War.

1917 – Russian Revolution. Propaganda was heavily used as part of the Russian revolution, including using rail cars with slogans in bright colours to attract audiences.

Modern fake news

The vast majority of families and young people are now able to access news and information from lots of different sources including online and social media. This means fake news can be produced quickly and is much more readily available.

When there is so much information available, how do we know how information is checked or is accurate?

Provide children with a copy of a recent 'true' newspaper report (*printed or reliable digital source*).

Pupils read and discuss:

- How would someone have checked that the information is true?
- What steps would be taken?
- What evidence would be needed?
- What is the purpose of the story?
- How could we find out where the story had come from?
- What would happen if the story was published without all of this information being checked?

Why can fake news be a problem?

Ask pupils to consider the reasons why fake news can be a problem, such as:

- It might influence people's decisions
- You are unsure what is fact and what is fake
- It causes confusion and fear
- It can lead to mistrust
- You can be unsure of who or what information you can rely on, affecting your ability to make informed choices

Sometimes children might not have the reading comprehension ability to discern what is real or fake news. Young children can also struggle to differentiate between the real world and digital world. Young children can also become more anxious and worried about information.

Watch this short BBC bitesize video on fake news and how to think like a journalist <https://www.bbc.co.uk/bitesize/articles/z63wwty>

Activity: children to think like a journalist

Show children some different websites, for example:

<https://zapatopi.net/treeoctopus/> (FAKE)

<https://www.ripleys.com/> (TRUE)

<https://www.allaboutexplorers.com/explorers/drake/> (FAKE)

<https://news.sky.com/story/new-zealand-baby-ghost-shark-discovered-off-south-island-in-very-rare-find-12543436> (TRUE)

They are going to be **fake news detectives** and figure out which stories are true and which are false.

What kinds of questions do they need to ask? What evidence is provided and how is it checked?

Pupils should consider ways to check news including:

When was the article last updated? How current and up to date is the information?

Where is the site being hosted e.g. a reputable company or organization such as the BBC, National Geographic or personal sites such as Wix, Weebly etc?

What information are you being shown? It is biased? Does it cover a range of opinions?

Why do/don't you believe this article? Can it be verified or checked?

What is the source of the information? How can you check? What is the targeted audience? Is there a section that states 'about us' so you can find out more?

There is some additional video content to consider from Internet Matters. This also contains examples of different types of fake news and misinformation: https://www.internetmatters.org/issues/fake-news-and-misinformation-advice-hub/learn-about-fake-news-to-support-children/#what_is_fake_news

Ways to deal with fake news

- Don't share it
- Do your own research
- Do not participate in challenges
- Look at different sources of information to see if you get the same information
- Talk to trusted adults

Other places for child-friendly headlines and news information:

• **Economist Foundation:** <https://talk.economistfoundation.org/>

• **BBC Newsround:** <https://www.bbc.co.uk/newsround>



Session 5: Fake news #2

Often, topical issues become areas for fake news. How can we identify misinformation or fake news about vaccines and look after our mental health so we do not become anxious about information that we are reading?

Discussion: Have children heard anything concerning about vaccines?

Is there anything that might have been misleading? How could we check (think back to previous lesson)?

Can you spot the misinformation about vaccines? **(resource 4)**

How can fake news and misinformation spread?

Misinformation can be spread on purpose such as online and through social media or be told by someone else, knowing it is untrue. Sometimes fake news will be spread without knowing it is fake. For example, a friend might read something fake online and believe it to be true.

They then tell another friend who also believes it and tells someone else. This can also happen when people share fake news on social media, without realising it is untrue.

Why do social media and the websites spread false news?

Websites often receive money for the number of people or traffic that visits their websites, so they might use false information to make you click and visit.

Once something is shared on the internet, it can spread very quickly. It can then become more difficult to source the original information and evidence.

There are now websites and companies who are trying to identify fake news and report them including: <https://fullfact.org>

Fake news and mental health

The average child now spends two hours a day (weekdays) online and three hours at the weekend. One quarter of 10 to 15 year olds in a recent survey reported to spend more than six hours a day online at weekends (*information from OECD 2021 Children and Young People's Mental Health in a Digital Age*).

Greater social media use in children and young people is linked to:

- Poorer patterns of sleep
- Lower rates of wellbeing
- Increased issues around self-image and body image
- Increased risks of cyber bullying

Fake news can contribute to a negative wellbeing and mental health state. When we read fake news, we can feel powerless. This can lead to feelings of anger and frustration or even fear. Children's self-esteem can be affected if they believe fake news and then later learn that it was not real. A 2018 study showed that almost half of tweens and teenagers surveyed were worried about their inability to tell which stories in their social media feeds were false and which were real; almost two-thirds said fake stories made them trust the news less.



Tip tips to look after your mental health with fake news:

1. Take breaks from social media.

When it feels overwhelming, take time away from technology and social media. Often we call this 'digital detox'. If you are concerned that information is incorrect, report it to a trusted adult or internet safety charities.

2. Confirm claims with a trusted source.

If you are becoming anxious about a particular story or information, can you check it with a reliable source? Check who made the information. Check several different sources to see if they report the same thing. Look at the information in the URL. Academic institutions (denoted by a .edu) and the government (.gov) can be among the most reliable places for research, statistics, and factual information.

3. Take time out from others' opinions.

If others' opinions are causing you stress, have some time away to stop you become more stressed about the same things.

4. Use mindful strategies to help your stress.

Mindful strategies can help us to manage stress levels and feel calmer, such as breathing techniques, getting fresh air or exercise.

5. Talk to a trusted adult or friend if you are worried. Charities such as the NSPCC can also help and provide advice.

Activity follow up ideas:

Design posters of how to look after your mental wellbeing online

Make a news report or vlog about mental health and social media

Photo Credit: Betsy Maytham



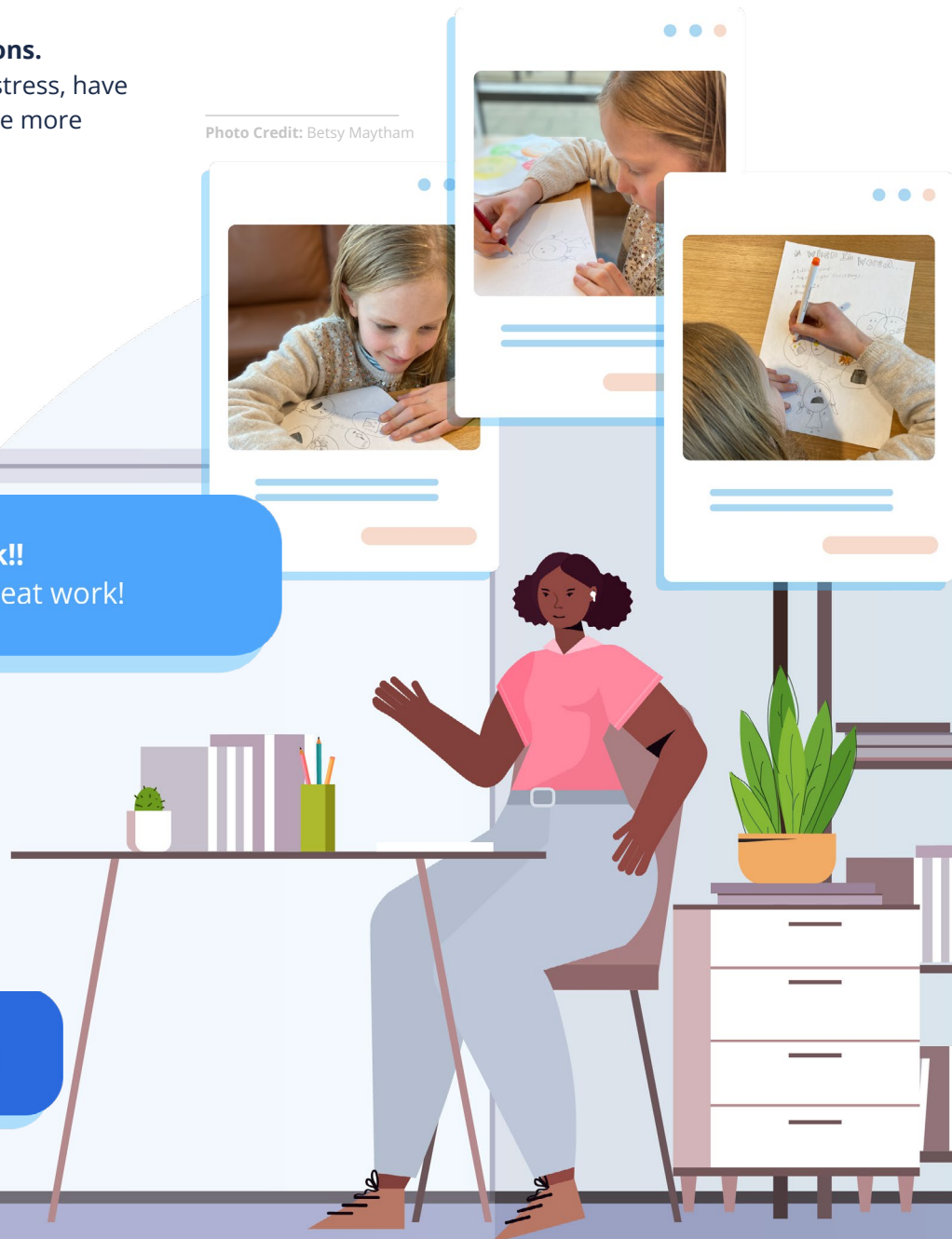
Amazing work!!
Keep up the great work!



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Resources

Resource 1: Vaccine Timeline

1612

Typhoid Fever appears.

1648

Yellow Fever epidemic in West Indies. Records show Boston (USA) put in place a quarantine for all ships arriving from the West Indies due to "ye plague or like in[fectious] disease."

1721

First English 'Variolation' recorded for smallpox by Lady Mary Montagu for her daughter by an English Physician.

1774

An English farmer, Benjamin Jetsy, inoculated his family with cowpox lesion matter. When smallpox hit his Dorset village, his family reported no symptoms. Jetsy was not interested in furthering his work. His wife put on his tombstone "the first person who introduced the cowpox inoculation."

1578

Whooping cough first identified.

1613

Spanish Flu appears.

1661

Royal Support for Vaccines with Chinese Emperor K'ang His.
The Emperor wrote about it in a letter to his descendants.

1740

German Physician Friedrich Hoffman identified Rubella (commonly known as 'German Measles').

1803

The term vaccination was coined deriving from 'vacca' the Latin for cow.
This was attributed to English physician Richard Dunning, a colleague of Edward Jenner's.

1853

It became mandatory for all babies to be vaccinated against small pox within the first three months of infancy. If parents did not comply they were imprisoned.

1922

America introduced a law that children could not attend school unless vaccinated for smallpox.

1971

Measles, Mumps, Rubella vaccine licensed

2020

First Coronavirus vaccines issued.

1840

Smallpox vaccines being offered to young children in Britain for free.

This is the first recorded instance of a free health care service.

1879

First laboratory vaccination created by Louis Pasteur for Chicken Cholera.

Chickens were vaccinated with a month-old sample first. When they were then injected with fresh bacteria, they did not become ill.

1933

Influenza virus identified.

2000

99% reduction in Polio (between 1988 - 2000) as a result of vaccinations.

2021

Malaria vaccine recommended by World Health Organisation

Resource 2: Vaccination Quiz

Some questions may have more than one correct answer!

Question 1

A vaccination is used to:

- a** Protect us from illness
- b** Prevent illness
- c** Cure illness

Question 2

A vaccination is made from:

- a** A weakened or inactive version of the microbe
- b** Microbes that are not harmful to humans
- c** A strong version of the microbe

Question 3

Vaccines work by:

- a** Activating your immune system to defend against infections
- b** Stopping microbes from entering the body
- c** Remembering what the infection was for next time
- d** Stopping your immune system from working

Question 4

How many children's lives are estimated to be saved by vaccines every year?

- a** 500,000
- b** 1-2 million
- c** 2-3 million

Question 5

What infection was the first British vaccine developed against?

- a** Influenza
- b** Smallpox
- c** Polio

Question 6

Which methods of transport does UNICEF use to get vaccines to children in remote locations?

- a** Reindeer
- b** Cargo plane
- c** 4 x 4 vehicle

Question 7

The name vaccination comes from the Latin for:

- a** Sheep
- b** Pig
- c** Cow

Question 8

True or false:

Some infections cannot be treated with vaccines.

Question 9

True or false:

Vaccines have to go through a rigorous process before they are approved for use.

Resource 2: Vaccination Quiz Answers

Some questions may have more than one correct answer!

Question 1

A vaccination is used to:

- ☒ a Protect us from illness
- ☒ b Prevent illness
- ☐ c Cure illness

Question 2

A vaccination is made from:

- ☒ a A weakened or inactive version of the microbe
- ☐ b Microbes that are not harmful to humans
- ☐ c A strong version of the microbe

Question 3

Vaccines work by:

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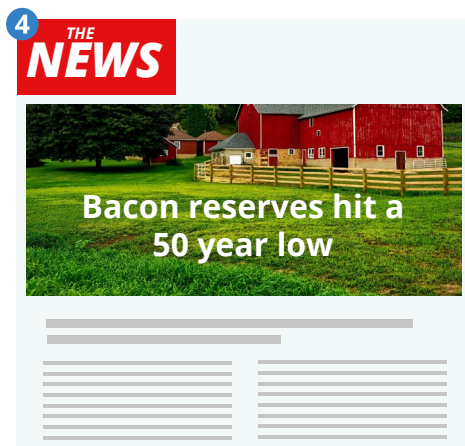
True or false:

Vaccines have to go through a rigorous process before they are approved for use.

Resource 3 : Fake News Headlines

Teacher reference of where the headlines are from

1. Fake
2. The Guardian 2018
3. Wales Online 2016
4. Fake
5. Sky News July 2018
6. Huff Post 2022
7. Independent 2021 *(True but misleading as only in Germany!)*



All photos above are from Pexels.com

Resource 4

Teacher reference: can you spot the misinformation below?

False:

- Vaccines can alter human DNA
- Vaccines work differently on different populations, ethnicities or cultures
- Vaccines have microchips

True:

- Vaccines go through strict testing procedures
- Vaccines give people protection from viruses



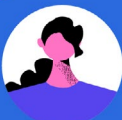
Vaccines work differently on different populations, ethnicities or cultures



Vaccines go through strict testing procedures



Vaccines give people protection from viruses



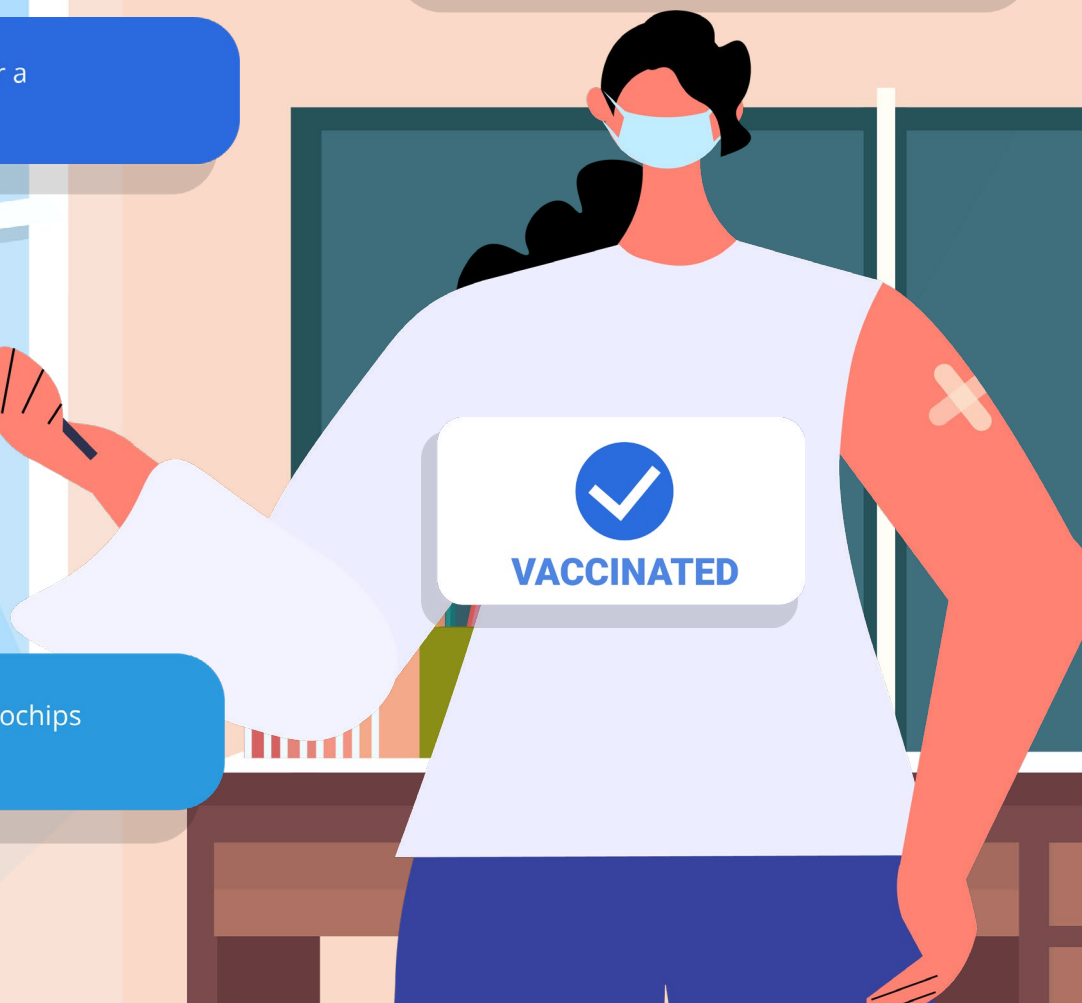
Vaccines can alter a human's DNA



Vaccines have microchips in them!



VACCINATED



Glossary of key terms (for children)

Antigen – the part of a germ that the body's immune system can recognise. The blood then produces antibodies to prevent the germ from causing disease.

Antibodies – a type of protein that your blood produces to fight an illness. Antibodies are also known as **immunoglobulins**. Antibodies fight specific illnesses, so you have lots of different ones for all the different illnesses you've come into contact with.

Bacteria – tiny **organisms** that can be found in all natural environments. There are a large number of different bacteria and most of them are harmless or even helpful. Bacterial infections happen when some of the harmful bacteria get into the body, to a place they shouldn't be. Bacteria is a type of **microbe**.

Fake news – people sometimes use this phrase to mean that some information is misleading or that someone has exaggerated or even lied.

Flu – see **influenza**.

Fungi – a fungus (plural fungi) is a type of **microbe**. Some fungi are useful, such as mushrooms or the fungus that is made into a medicine called penicillin. Some can be harmful and can make you ill if they get into your body.

Immune system – the body's way of fighting anything that gets into your body that shouldn't be there, such as a **bacteria** or a **virus**.

Immunity – when your body is able to respond to bacteria and viruses to fight them off, because your **immune system** recognises them as not belonging to your body.

Immunocompromised – if someone is immunocompromised, it means that their **immune system** isn't working as well as it ought to, which means they may get ill more easily and feel more unwell than most other people.

Immunoglobulins – see **Antibodies**.

Influenza – also known as **flu**, influenza is the name

given to a group of viruses that cause the same or similar symptoms, such as aches, sore throat and a cough.

Microbe – a tiny organism that cannot be seen without a microscope. There are three main types of microbe: **viruses**, **bacteria** and **fungi**. Microbes are also known as **micro-organisms**.

Micro-organism – see **microbe**.

Organism – any individual life form, such as an animal, plant or even a single-celled life form.

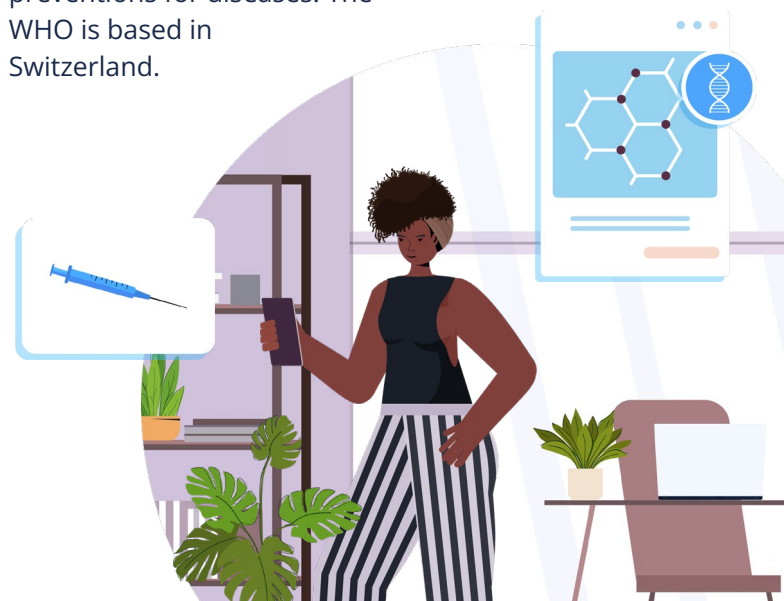
Pathogen – a tiny organism that can cause a disease. A **virus** and **bacteria** are two types of pathogen.

Plasma – part of your blood, where your **antibodies** are stored.

Vaccine – a type of medicine that is used to kick start your body's **immune system** to produce **antibodies**. These **antibodies** can then be stored to protect you against disease.

Virus – a tiny, simple, infectious organism that can only grow and reproduce in a living cell, such as those in a human body. A virus is a type of **microbe** and often causes us to feel unwell.

World Health Organisation – sometimes known as WHO, this is the group of scientists and doctors who advise the United Nations (a large group of countries, including the UK) on all medical matters, and help those countries work together to find cures and preventions for diseases. The WHO is based in Switzerland.



We hope you have found this booklet helpful. Should you require any further information about vaccinations, here are some websites where you can find **trustworthy** and **comprehensive support**.

Useful websites for finding information about vaccines (for teachers)

<https://www.cdc.gov/vaccines/hcp/conversations/understanding-vacc-work.html>
<https://www.immunology.org/celebrate-vaccines/policy/uk-research-is-leading-the-world>
<https://www.who.int/news-room/feature-stories/detail/how-do-vaccines-work#:~:text=Vaccines%20contain%20weakened%20or%20inactive,rather%20than%20the%20antigen%20itself.>
<https://kidshealth.org/en/parents/immune.html>
<https://www.hackneyservicesforschools.co.uk/extranet/vaccination-resources>
<https://www.gov.uk/government/publications/covid-19-vaccination-resources-for-children-and-young-people>

We are also very aware that this topic can be an emotive one for children, given what they have experienced throughout the pandemic. Should you feel that your pupils would benefit from mental health and wellbeing support, they (and you) might find that support in the following places:

(Please note that this is not an exhaustive list and these resources are not expected to replace any safeguarding or wellbeing measures within your school.)



Mental health support (for children)

Childline: Children can call **0800 1111** for support 24/7 or use the **1-2-1 online chat**. There are also confidential message boards on their website www.childline.org.uk

SHOUT: Children can **text SHOUT to 85258** for free, **confidential mental health support, 24/7**.

Mindjam (<http://www.mindjam.org.uk/>): Mindjam provide emotional support for children & adolescents through gaming and game design. They offer **online 1-2-1 mentorship** and **guidance for children** suffering with anxiety, stress, and social issues through positivity, learning new skills and play.

The Mix: Children can visit <https://www.themix.org.uk/> for **1-2-1 online chat**, or call **0808 808 4994**. They can also text **THEMIX to 85258**.

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