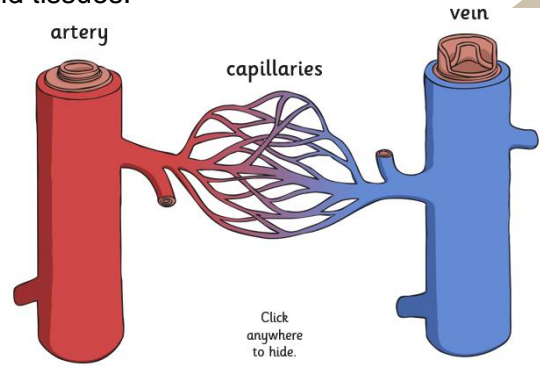


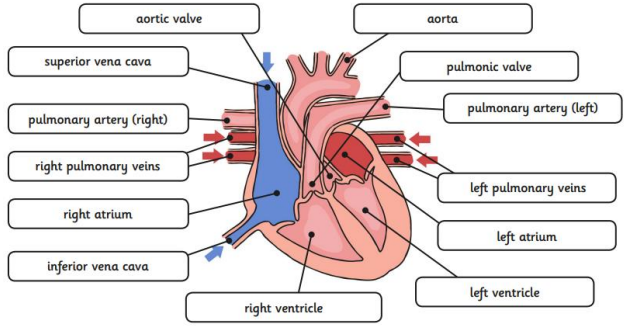
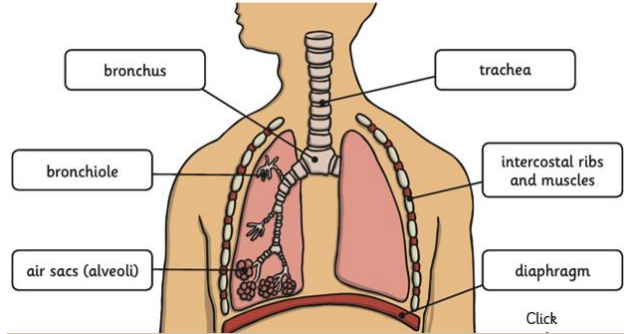
## TERM 2 OVERVIEW YEAR 5/6 – Science

### Term 2 Book(s) – Who Let the Gods Out

Topic(s) – Year 6: Animals including Humans		Guide Time = 7 weeks
<b>Assessment:</b>	Twinkl End of Unit Assessment.	<b>Very Important Points (VIPs):</b>  Arteries – Take blood AWAY from the heart to the body organs and tissues. When blood is pumped through these, you can feel your pulse. Veins – Take blood TOWARDS the heart from body organs and tissues Capillaries – Tiny blood vessels which take the blood into organs and tissues.  
<b>Links to prior learning (sequencing) and canon book</b>	Children will build upon their prior KS1 learning of healthy eating and the human body. Children will build and draw upon aspects of their prior LKS2 learning: Year 3 Science: Animals including humans (Skeletons and nutrition) Year 4: Animals including humans (Teeth and the digestive system) Children should have and demonstrate prior knowledge of body systems (eg. Digestive system, skeletal system), knowledge of organs and their functions, nutrition and healthy eating principles.	
<b>Links to other learning (cross fertilisation)</b>	<u>English</u> – writing information texts about healthy lifestyles <u>Maths</u> – Gathering data for the investigation. Using stopwatches to time pulse rates. Plotting the results of the pulse rate investigation in charts, tables and line graphs. Analysing the data for trends and explaining what the graph tells us. <u>PSHE</u> – Illegal substances and the effects they have on the human body. The importance and impact PE / PA can have on our own physical and mental wellbeing, especially in our current, modern day world. <u>PE</u> – Invasion games. Link to how our pulse rate changes throughout the activity. Design our own PE activities to raise the heart rate. Impact of exercise / PE / PA and school sport has on our whole physical and mental health and wellbeing.	

Red blood cells are pushed around your body by your heart, which acts like a pump, beating about 100,000 times a day!

As the blood cells reach your heart, they pass through valves, which are like doors and only open one way, keeping blood pumping in the same direction.

	<p><u>History</u> – Ancient Greeks. Look at the food they would have eaten and evaluate it was a healthy, balanced diet.</p> <p><u>Thematic Questions:</u></p> <p><u>Modern Britain:</u> Other than on the body, what other impacts can illegal drug usage have on people and our society?</p> <p><u>Culture:</u> How can we create a culture in our school of healthy living?</p> <p><u>The World Beyond Us:</u> What impact might a sustained unhealthy diet and lifestyle have on someone in 50 years' time?</p> <p><u>The World Around Us:</u> How does someone smoking have an impact on the people around them?</p> <p><u>Healthy Bodies, Healthy Minds:</u> How does smoking and illegal drugs have negative effects on the human body?</p> <p><u>Technology in Action:</u> How has developments in medical science enabled us to know more about the circulatory system?</p>	<p>Blood is pumped to the lungs to pick up oxygen (O<sub>2</sub>) which has been inhaled (breathing in). It then goes back to the heart to get pumped to every other part of the body</p> <p>As it drops off oxygen around the body, it picks up carbon dioxide (CO<sub>2</sub>) to take back to the lungs</p>  
<p><b>Links to future learning</b></p>	<p>This unit will support the children's learning when moving on to Year 6 Science units, in particular:        Year 6 Living things (classification)</p> <p>KS3 Biology – Human body systems.        KS3 PSHE – drug/alcohol awareness</p>	
<p><b>Character/Wider Development ('50 things', cultural capital, skills)</b></p>	<p><u>Visits to science museums such as Eureka, Natural History museum.</u></p> <p>School nurses visit to year 6 for annual nutrition and healthy eating session.</p> <p>Link with local supermarkets or farms to discuss healthy eating and look at produce.</p> <p>Link with local cafes and restaurants to make a healthy balanced meal.</p>	<p>Nutrients (made from eating carbohydrates, fats and proteins) allow your body to perform daily activities. Enzymes help break food down in the digestive system and they become useable nutrients, which are absorbed into your bloodstream and passed to parts of your body through the capillaries.</p>

Link with PE curriculum to carry out pulse rate experiments.  
Create own work outs to teach to younger year groups.

Invite local PCSO into school to discuss illegal substances and how the police deal with this/work with communities.

**Fat Questions:**

How has medical research over time influenced and impacted on our knowledge of positive and harmful effects on our body?

## OVERVIEW OF TEACHING SEQUENCE

Key Facts / Learning	Learning Focus or Key Question	Learning Outcomes (NC)	Key Words/ Vocabulary	Greater Depth/SEND	Misconceptions	Activities and Resources
<b>Week 1</b>	To recognise and name parts of the circulatory system.	Identify and name the main parts of the human circulatory system	System, human, body, circulatory, circulation, skeletal, muscular, digestive, organs, parts, heart, lungs, blood vessels, aorta, atrium, ventricle, vein, pulmonary, superior vena cava, inferior, pulmonic, aortic valve, trachea, bronchus, bronchiole, diaphragms, air sacs, alveoli, capillary, intercostal muscles and ribs.	<p>GD – children should be encouraged not just to name parts of the systems previously taught, but to explain the process to their peers. GD should provide a carefully written comparison of the three different circulatory systems.</p> <p>SEND – children may need pre-teaching the vocabulary before the session so they are familiar with it. Compare human circulatory system with one other.</p>	<p>It will be helpful if children have identified the parts and functions of the different systems within the body in Years 3 and 4. Check prior knowledge to be aware of misconceptions before starting the unit.</p> <p>There is a teacher information sheet in the folder to help you prepare before the lesson!</p>	<p>Discuss what a system is and define it. Ask children if they can name any systems in the body. Group/paired starter task – make notes on the systems they looked at in y3/4: Skeletal, muscular and digestive. Share notes as a class. Discuss what the word ‘circulation’ means and what the circulatory system is. Watch a video explaining the system <a href="https://www.youtube.com/watch?time_continue=4&amp;v=pjOxpLEynIE&amp;feature=emb_logo">https://www.youtube.com/watch?time_continue=4&amp;v=pjOxpLEynIE&amp;feature=emb_logo</a> Use the powerpoint to look in more detail at the diagrams and explore the terminology, before following the explanation of how the system works.</p> <p>Independent task – label the parts of the circulatory system on the worksheets (differentiated) then compare the circulatory system of a human to that of a dog/bee/fish (differentiated).</p> <p><u>Yr5: Deepen the moment</u></p> <p>What could happen if one part of the circulatory system is not working properly? Give an example.</p> <p><u>Yr6: Deepen the moment</u></p> <p>Is one part of the circulatory system more important than the other parts? Explain with examples.</p>

<b>Week 2</b>	To understand and explain the function of parts of the circulatory system.	Describe the functions of the heart, blood vessels and blood.	Human, circulatory, organs, parts, heart, lungs, blood vessels, aorta, atrium, ventricle, artery, vein, pulmonary, superior vena cava, inferior, pulmonic, aortic valve, trachea, bronchus, bronchiole, diaphragms, air sacs, alveoli, capillary, functions, intercostal muscles and ribs.	GD – Children should be able to create and answer questions that require an explanation, not just a one word, closed answer. Model how to create these.  SEND – May need support accessing the texts. LA children may be best paired with a higher ability to create questions together. Also, there are question cards in the folder which they could use to find the answers to.	Children often forget that the lungs are part of the circulatory system because they focus on blood flowing around the body.  The video links should help demonstrate the whole system working to ease the misconception.  Remind children why the blood is coloured blue and red on diagrams.  There is a teacher information sheet in the folder to help you prepare before the lesson!	Recap the VIPs from last lesson – the vocabulary and labels for the part of the heart together as a class.  Discuss what function means and recap the functions of parts of the system in the video: <a href="https://www.youtube.com/watch?v=f9ONXd-anM">https://www.youtube.com/watch?v=f9ONXd-anM</a>  Using the reading for productivity information and last week’s work, children are to produce quiz questions and answers in their books on the circulatory system. Adults should check answers as circulating the room.  Children could present their quiz in any way you like – KAGAN quiz quiz trade cards, Who wants to be a millionaire etc. Hold a quiz at the end of the lesson! <u>Yr 5: Deepen the moment:</u> Explain how the lungs are a key part of the circulatory system and how we can look after them.  <u>Yr 6: Deepen the moment:</u> Explore the various problems that people can have with their lungs and their effects on people’s physical and mental wellbeing.
<b>Week 3</b>	To understand and examine the need for a healthy and balanced diet and lifestyle.	Describe the aspects of a healthy lifestyle. Outline what consists of a healthy and balanced diet. To describe the impact of diet and exercise on the human body.	Healthy, lifestyle, balanced, diet, fat, sugar, carbohydrate, fibre, protein, fruit, vegetables	SEND- Card sorting activity, grouping healthy and unhealthy foods and activities. GD- Information text- open ended task allowing GD children to explore in more detail.	Children often think that all fatty foods are unhealthy. Children are sometimes unaware that all food types are required to be healthy (but in moderation)	Recap previous lesson VIPs. Go through lesson content- children to make notes on planning sheet. Research activity to add extra information to planning sheet. Children to then use planning sheet to...  <u>Year 5-</u> From the information given in the lesson, complete the picture and text template or create a poster to inform others and show knowledge of a healthy lifestyle.  <u>Year 6-</u> Create a written information text informing others about what consists of a healthy lifestyle.

						<p><u>Year 5 Deepen the moment:</u> Choose one of the food groups. What would happen if a person ate too much of that one food group specifically?</p> <p><u>Year 6: Deepen the moment:</u> Why was John Boyd's work so influential towards 'the poor'? How has his work changed lives today?</p>
<b>Week 4</b>	To investigate the effects of exercise on the body.	Define what exercise is and the different types. Describe the importance of exercise for the body. Conduct an investigation to explore the effect of exercise.	Exercise, bone, muscle, strength, pulse, heart rate, intensity, vigorous, moderate, stamina.	<p>GD- Opportunity to plan and conduct their own investigation, opportunity to go into as much depth as they want. Children will make links and explain key links of exercise on our bodies physically and mentally. Key terminology and explanation of the processes and reasons behind this impact and importance for our current, but future health.</p> <p>SEND: Mixed ability groups to plan and conduct experiments. Take photos and use pictures / diagrams to support their</p>	<p>Children often think there is only one type of exercise. They only see 'sport' as exercise and don't explore are aware of the full range of exercise and physical activity.</p> <p>Children don't use key terminology and only think your body becomes hot and sweaty.</p>	<p>Recap previous lesson's VIPs. Explore lesson content. Children to plan investigations in groups and conduct n groups:</p> <p><u>Year 5:</u> Conduct a practical enquiry investigation to observe the effects of exercise on the body. For example, try a number of different exercise and record your pulse after each one.</p> <p><u>Year 6:</u> Conduct a fair test investigation to explore the effects of exercise on the body. For example, you could change the length a person runs (10m, 20m, 30m etc) and record the effect on your heart rate (pulse). Think carefully about making the experiment a <u>fair test</u>. What will you need to keep the same and so on...</p> <p><u>Year 5: Deepen the moment</u> Pick a sport. Which type of training/exercise do you think a player of the sport should focus on and why?</p> <p><u>Year 6: Deepen the moment</u> Explore the least healthy country in the world? Explain the reasons as to why is it and how could it could be changed.</p>

				understanding and explanations. Use symbols of key effects to support their retention of areas and the effects on the body.		
<b>Week 5</b>	To examine evidence from my investigation to support / refute my assertion.	Explore how trustworthy a set of data is.  Conclude and report findings from investigation.	Conclusion, findings, report, record, reliability, Exercise, bone, muscle, strength, pulse, heart rate, intensity, vigorous, moderate, stamina.	GD- Opportunity to evaluate own investigation and plan for alterations/further experiments in the future.  SEND: Mixed ability groups to conclude experiments. (Same groups as last lesson).	Children misunderstand the concept of a fair test and that it is the independent variable that effects the results.	Discuss findings from last lesson as a class. Recap investigations/enquiries.  <u>Year 5:</u> Complete * or ** investigation report sheet.  <u>Year 6:</u> Complete *** investigation report sheet.  Debate the pros and cons of technology's impact on our lifestyles today and the effects on our body.
<b>Week 6</b>	To explain the effect legal and illegal drugs have on the body.	Describe the impacts of drugs on the body, including smoking, alcohol and illegal drugs.	Drugs, legal, illegal, prescription, smoke, alcohol, impact, brain, heart, lungs.	GD- Freedom to create on information leaflet on the broad topic of 'healthy living' so as much detail and information can be included as possible. Also links to prior learning so opportunity to recall and expand upon things already learnt.	Children sometimes presume that all drugs are bad for you.	<u>Year 5:</u> Create an information text on why smoking is bad for you using the template provided.  <u>Year 6:</u> Create an information leaflet on living a healthy lifestyle, include the impact of smoking and illegal drugs on the body. Can you think back to our previous lessons and include information on a balanced diet and exercise?  <u>Year 5: Deepen the moment:</u> Can a person lead a healthy lifestyle if they eat a balanced diet and exercise, but also smoke?  <u>Year 6: Deepen the moment:</u> Prove it! Drugs (including alcohol and smoking) just impact people's physical health.

				SEND- Dangers of smoking cut and stick activity		
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Week 7 – Children will complete their end of unit assessment test based on their learning this half term.

Context (big picture learning)

Science is a vital, creative subject that enables all children to explore, examine and think; understanding the world around and beyond us and allows us to discover and change the world. Science is a core subject that fosters children’s learning across all others and allows children to link and build upon core skills, flourish and thrive as well as continue to develop their sense of curiosity of the subject, its importance to develop others as well as the world in which we live in.

Science is more than just a subject, it is our world and life; it is discovery, questioning and challenging; testing theories and problem-solving; determination and resilience; and we want our children to explore and learn this so they can go home and apply it throughout their lives, as a life-long scientist.

This unit not only builds, secures and embeds prior learning that has taken place throughout their primary life but allows them to explore in more depth these key scientific concepts which are vital in their knowledge of the world around and beyond them. It provides them context to everything we produce and use in our daily lives and helps children to consider changes they could make to support national and global changes that will help improve our environment and improve our climate.

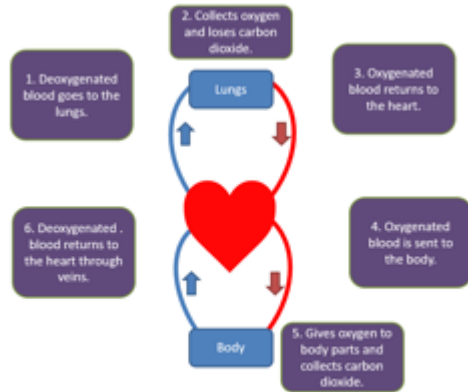
Folder name: Trust shared > Primaries > Departments > KS2 > Year 5/6 Planning > Cycle B > Autumn 1 – Who Let the Gods Out? > Science > Autumn 2

Week 1: L1    Week 2: L2    Week 3: L3    Week 4:L4    Week 5: L5    Week 6: L6    Week 7: Assessment



## Very Important Points (VIPs)

The circulatory system is made up of the heart, the lungs, blood and the vessels it travels through. Its function is to transport nutrients, gases and wastes between the cells of the body and the digestive system, respiratory system and excretory systems. The heart pumps blood around the body. It is a muscle that never stops beating. The heart is made of two pumps. One sends blood to the lungs and back, and one sends blood around the body and back.



Cigarette smoke contains around 4000 different chemicals, including 70 that can cause cancer. These can also damage the heart and blood vessels. Alcohol is also a drug, but not one that many consider in the same light as smoking. It is just as addictive. Alcohol causes damage to organs in the body too: the liver. The liver breaks down the alcohol as part of its detoxification process. Exercise has effects on mental health and mood. It releases endorphins which makes humans feel happier and calmer.

## Important People: John Boyd Orr

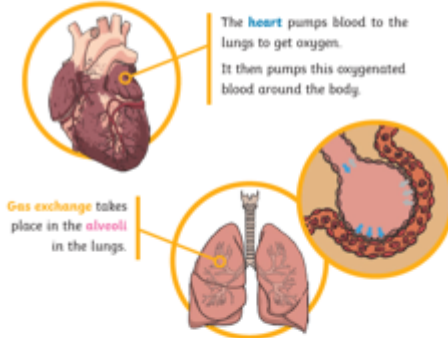
John Boyd Orr was the first scientist to show that there was a link between poverty, poor diet and ill health.

He showed that drinking milk lead to an increase in height and weight of children.

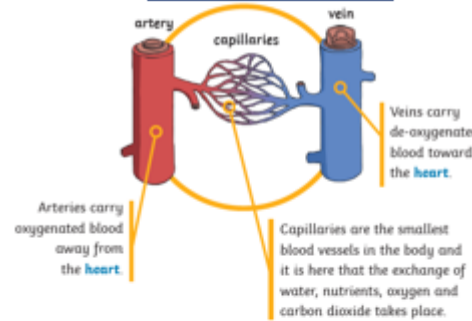
This led to the introduction of free school milk for all school children in 1946.



### The Heart:



### The Blood Vessels:



### Did you Know?

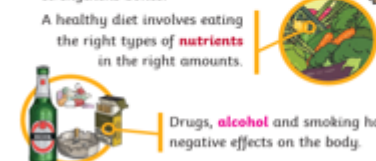
The heart beats around 3 billion times in the average person's lifetime.

If you put your circulatory system on a straight line, it is actually long enough to orbit the Earth two and a half times!

The human stomach can stretch large enough to hold almost 1 gallon (4.5 litres) of water.

### Regular Exercise:

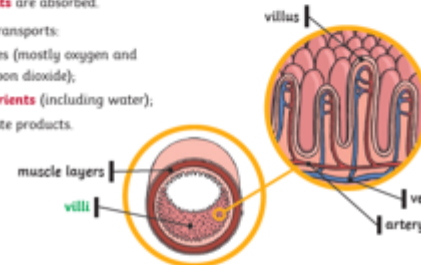
- strengthens muscles including the heart muscle;
- improves circulation;
- increases the amount of oxygen around the body;
- releases brain chemicals which help you feel calm and relaxed;
- helps you sleep more easily;
- strengthens bones.



### The Small Intestine:

The nutrients pass through the villi and are absorbed into the blood vessels. Water is absorbed in the small intestine in exactly the same way as other nutrients are absorbed.

- Blood transports:
- gases (mostly oxygen and carbon dioxide);
  - nutrients (including water);
  - waste products.



### Fat Question:

How has medical research over time influenced and impacted on our knowledge of positive and harmful effects on our body?

## Key vocabulary

**Circulatory System:** A system which includes the heart, veins, arteries and blood which transports substances around the body.

**Heart:** the organ that pumps blood around the body.

**Lungs:** the organ that gathers in air as part of breathing.

**Blood:** the liquid that transports oxygen around the body.

**Oxygen:** the gas in the air that is needed for respiration.

**Vein:** a blood vessel carrying blood back to the heart.

**Artery:** a blood vessel carrying blood away from the heart.

**Pulmonary:** Relating to the lungs.

**Gas chamber:** The process by which oxygen enters the bloodstream from the lungs and the lungs receive carbon dioxide from the blood to breathe out. This process happens in the alveoli and the capillaries around the alveoli.

**Alveoli:** Tiny air sacs in the lungs where gas exchange takes place.

**Exercise:** the activity of exerting your muscles in various ways to keep fit.

**Addiction:** when you feel an uncontrollable urge to do something as it makes you feel good.

**Drugs:** a substance containing natural or man-made chemicals that has an effect on your body when it enters your system.

