ST LAWRENCE C.E. PRIMARY SCHOOL LEARNING JOURNEY

SUBJECT: Science UNIT: Animals including Humans TERM: Autumn 2
YEAR GROUP: 6

THE BIG QUESTION	
How does the human body function successfully?	
END OF UNIT OUTCOME	(Linked to The Big Question) **Circulatory System Concept Hexagons**
OBJECTIVES	• identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood • recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function • describe the ways in which nutrients and water are transported within animals, including humans.
Working Scientifically	During Years 5 and 6, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content: • planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary • taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate • recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs • using test results to make predictions to set up further comparative and fair tests • reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations • identifying scientific evidence that has been used to support or refute ideas or arguments.
Safety in Science	CLEAPPS
CONCEPT: Legacy	
LESSON 1 QUESTION	**What are the main parts of the Circulatory System?**
KEY KNOWLEDGE	The main parts of the circulatory system are the heart, blood vessels, and blood. The heart pumps blood throughout the body, while blood vessels (arteries, veins, and capillaries) act as a network of tubes that carry the blood. **Heart:** This muscular organ acts as a pump, ensuring that blood circulates continuously around the body. **Blood Vessels:** These are the tubes through which blood travels. **Arteries:** carry oxygen-rich blood away from the heart to the rest of the body. **Veins:** carry blood back to the heart. **Capillaries:** are tiny blood vessels that connect arteries and veins and are where the exchange of oxygen, nutrients, and waste occurs between the blood and the body's cells. **Blood:** This liquid is made of various components, including red blood cells, white blood cells, platelets, and plasma. Blood's function is to carry oxygen, nutrients, and hormones throughout the body and to transport waste products, such as carbon dioxide, to be removed.
RICH TASK	Introduce The Big Question – what do they already know? Explore KO – copy in book after title page and paper copy home. **Rich Task** – Create a concept wheel to explain the different parts of the circulatory system

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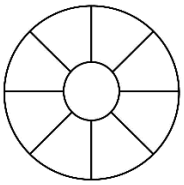
<table>
<tr><td>SUPPORT AND CHALLENGE</td><td colspan="3">S – use of jotters, BBC bitesize clip, partner talk, key vocabulary, knowledge organiser in books
C – Dual coding = encourage children to explain the function of each key element of the circulatory system and an appropriate image to represent it too.</td></tr>
<tr><td>KEY VOCABULARY</td><td>Heart
Arteries
Veins
Platelets
Nutrients
Circulatory System
Red blood cells
White blood cells</td><td>Blood Vessels
Capillaries
Blood
Plasma
Oxygen
Hormones</td><td>RESOURCES</td><td>The circulatory system – KS2 Science curriculum - BBC Bitesize
Concept Wheel templates
</td></tr>
<tr><td colspan="4"></td></tr>
<tr><td>LESSON 2 QUESTION</td><td colspan="3">What is the function of the heart?</td></tr>
<tr><td>KEY KNOWLEDGE</td><td colspan="3">Heart: The main function of the heart is to act as a muscular pump that circulates blood throughout the body, delivering oxygen and nutrients to all cells and removing waste products like carbon dioxide. The right side of the heart pumps deoxygenated blood to the lungs for oxygenation, while the left side pumps oxygen-rich blood to the rest of the body. This continuous pumping action maintains the function of organs, muscles, and tissues by ensuring they receive the essential components needed for survival.</td></tr>
<tr><td>RICH TASK
</td><td colspan="3">Retrieval Task – Circulatory system -
Revise KO
Rich Task – Children to make a model in groups to how a pumping heart works. The first bottle represents the atrium (receiving blood), the second represents the ventricle (pumping blood) and the third represents the body or lungs. Fingers pinching the straws act as the valves controlling the one -way flow of liquid. After experiment label the diagram of the heart to show an understanding of the experiment.
(Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary)</td></tr>
<tr><td>SUPPORT AND CHALLENGE</td><td colspan="3">S – practical experiment to show how the elements of the heart work
C – opportunity to write a written explanation of the experiment including all the vocabulary from the lesson</td></tr>
<tr><td>KEY VOCABULARY</td><td>Atrium
Valves
Circulates
Tissues
Deoxygenated</td><td>Ventricle
Heart
Muscular pump
Carbon dioxide
Oxygenation</td><td>RESOURCES</td><td>The circulatory system – KS2 Science curriculum - BBC Bitesize

Pumping Heart Model for Kids | Easy Human Anatomy Activity</td></tr>
<tr><td colspan="4"></td></tr>
<tr><td>LESSON 3 QUESTION</td><td colspan="3">What is the function of blood vessels and blood?</td></tr>
<tr><td>KEY KNOWLEDGE</td><td colspan="3">Blood Vessels: Blood vessels, a network of arteries, capillaries, and veins, function to transport blood throughout the body, delivering essential oxygen and nutrients to organs and tissues while removing waste products and carbon dioxide. Arteries carry oxygen-rich</td></tr>
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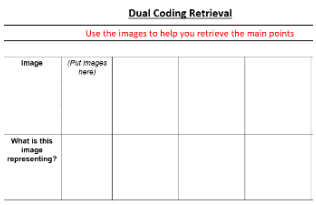
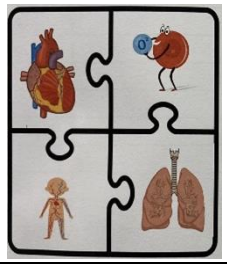
<table>
<tr><td></td><td colspan="3">blood away from the heart, capillaries facilitate the exchange of substances between blood and tissues, and veins return oxygen-poor blood to the heart
Blood: Blood is like the body's delivery service and cleaning crew! Its main jobs are to deliver important things like oxygen and nutrients to all your cells and to pick up and take away waste materials to be removed from your body. Blood also helps fight off germs to keep you from getting sick and carries other helpers, like hormones, to different parts of your body.</td></tr>
<tr><td>RICH TASK

Dual Coding Retrieval
Use the images to help you retrieve the main points
Image (Put images here)
What is this image representing?</td><td colspan="3">Retrieval Task – Function of the heart - How are the four images connected? Use the vocabulary to support the explanation.
Revise KO
Rich Task – Making own model of blood to identify the elements that make up blood. Answer the Dual coding retrieval sheet (have images of the materials used to create their own blood) – can they then explain below what that material was representing in the experiment and why it was used.
</td></tr>
<tr><td>SUPPORT AND CHALLENGE</td><td colspan="3">S – practical model to explore how different elements make up blood
C – dual coding task to give children the opportunity to explain the function of each component of the blood</td></tr>
<tr><td>KEY VOCABULARY</td><td>Red blood cells
White blood cells
Oxygen
Nutrients
Platelets
Arteries
Capillaries
Veins
Blood vessels</td><td>RESOURCES</td><td>The circulatory system – KS2 Science curriculum - BBC Bitesize
The circulatory system – KS2 Science curriculum - BBC Bitesize
• clear plastic bottle
• cereal hoops + red food colouring (red blood cells)
• small marshmallows (white blood cells)
• sequins (platelets)
• pom poms (nutrients)
How to Make Blood - Let's Go Live</td></tr>
<tr><td colspan="4"></td></tr>
<tr><td>LESSON 4 QUESTION</td><td colspan="3">What impact does diet, lifestyle, exercise and drugs have on our body?</td></tr>
<tr><td>KEY KNOWLEDGE</td><td colspan="3">What is a lifestyle?
Keeping your body healthy is very important. What we do and what we eat can make our body healthy or unhealthy. These decisions make up a person's lifestyle. A person's lifestyle is the way that they choose to live. In this guide, we will explore the effect of diet, exercise and drugs on our bodies.
Diet: food provides the energy and nutrients needed for growth, energy, learning, and fighting off illness. A balanced diet keeps you at a healthy weight and prevents diseases, while a poor diet can lead to feeling tired, poor concentration, becoming overweight or underweight, and health problems in the future. Fatty foods can clog blood vessels preventing blood from delivering what is needed and can cause a heart attack.
Exercise: The NHS recommends that young people do around an hour of exercise per day. The benefits of this include: having more energy, keeping your heart, lungs and muscles healthy, greater flexibility and strength (meaning fewer injuries), being more able to fight off infections, not becoming overweight. Exercise improves physical health, including</td></tr>
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<table>
<tr><td></td><td colspan="3">stronger muscles, bones, and a healthier heart, which leads to more energy and better fitness. It also boosts mental health by reducing stress, improving mood through chemicals called endorphins, and enhancing concentration and sleep quality.
Drugs: are chemicals that change the way our body or brain functions.
There are three main types of drugs.
- Stimulants are drugs which make you feel more awake and alert. These include caffeine, which is found in coffee and energy drinks and nicotine, which is found in cigarettes and vapes.
- Painkillers are drugs which dull pain. These include paracetamol and ibuprofen.
- Depressants are drugs which make you feel calm and drowsy. These include alcohol.
Some drugs are legal. This means that people at a certain age are allowed to purchase, sell or consume them. This includes cigarettes and alcohol. Some drugs are illegal. They change the way our brains and bodies work in an unhealthy or dangerous way. It is against the law to purchase, sell or consume any illegal drug.</td></tr>
<tr><td>RICH TASK</td><td colspan="3">Retrieval Task – Function of blood vessels and the blood – Key word retrieval (read blood cells, white blood cells, platelets, nutrients, blood vessels, blood)
Revise KO
Rich Task – CONNECT FOUR - Children to have four images representing ‘exercise, drugs, diet and sleep – ask class to explain how these four elements contribute to a healthy or unhealthy lifestyle.</td></tr>
<tr><td>SUPPORT AND CHALLENGE</td><td colspan="3">S – BBC Bitesize, jotters, KO, discussion to recap previous learning from years 3 and 4 in science
C – can children give specific examples based on the content discussed in lesson.</td></tr>
<tr><td>KEY VOCABULARY</td><td>Lifestyle
Nutrients
Endorphins
Caffeine
Painkillers
Legal</td><td>Energy
Balanced
Stimulants
Nicotine
Depressants
Illegal</td><td>RESOURCES</td><td>Connect four template
BBC Bitesize page
The effects of diet, exercise and drugs – KS2 Science curriculum - BBC Bitesize</td></tr>
<tr><td colspan="4"></td></tr>
<tr><td>LESSON 5 QUESTION</td><td colspan="3">How are water and nutrients transported throughout the body?</td></tr>
<tr><td>KEY KNOWLEDGE</td><td colspan="3">1. Digestion: First, the food a child eats is broken down in their digestive system.
2. Absorption: In the small intestine, the valuable water and nutrients from the food are absorbed into the bloodstream.
3. Circulation: The heart pumps this blood, which now carries the nutrients and water, throughout the body through a network of blood vessels.
4. Delivery: Blood travels through arteries to the body's cells.
5. Exchange: Tiny blood vessels called capillaries, which connect arteries and veins, have thin walls. This allows the oxygen, water, and nutrients in the blood to pass through the capillary walls and into the body's cells, where they are used for energy, growth, and repair.
6. Removal: The blood then collects waste products and carries them back to the heart through the veins to be removed from the body.</td></tr>
<tr><td>RICH TASK</td><td colspan="3">Retrieval Task – ‘Drugs, lifestyle, diet, exercise’ answers – children to write at least one appropriate question to match with each answer</td></tr>
</table>

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	Revise KO **Rich Task –** Improve my answer task		
SUPPORT AND CHALLENGE	S – key vocabulary, KO, jotters, previous work on the arteries, veins and capillaries C – Children to ensure their own answers include the key words, circulation, absorption, exchange, delivery, veins, capillaries, arteries		
KEY VOCABULARY	water digestion circulation nutrients abortion	**RESOURCES**	Improve my answer task
LESSON 6 QUESTION	**How does the human body function successfully?**		
KEY KNOWLEDGE	• Identify and name the main parts of the human circulatory system: This includes the heart, blood vessels, and blood. • Describe the functions of the heart, blood vessels, and blood: Understanding how the heart pumps blood, blood vessels transport it, and blood carries oxygen and nutrients. • Recognise the impact of diet, exercise, drugs, and lifestyle on the way their bodies function: This includes the effects of a healthy or unhealthy diet and lifestyle choices. • Describe the ways in which nutrients and water are transported within animals, including humans: This involves understanding how nutrients are delivered to the body and how water is absorbed and transported through the body. • These key knowledge points are essential for students to understand the basic functioning of the human body and its importance in maintaining health and well-being.		
END OF UNIT OUTCOME	**Revision of key knowledge – Retrieval Task –** Cops and Robbers – Give children five minutes to write down as much knowledge from the unit that they can remember and then ask them to rob ideas from others that they hadn't thought of themselves. KO quiz **Outcome linked to The Big Question – Circulatory System Concept Hexagons Task** What links to our concept have you found? 		
SUPPORT AND CHALLENGE	S – All previous learning from each question step. Opportunity to retrieve knowledge from cops and robber's task. Discussion of hexagons – putting to the side any that the class are unsure of the links to. Partnered talk and chose of hexagons to use. C – Opportunity to fit as many hexagons together as possible. Create a class bank of scientific terminology to use within explanations of links.		
KEY VOCABULARY	Circulatory system Function Heart Blood vessel Blood Red blood cell Veins Arteries Capillaries Life style Drugs Exercise	**RESOURCES**	Circulatory Hexagons Sheet Cops and Robbers template