





# .Mendell Primary School

*Aspire Challenge Achieve*

## Medium Term Plan Science

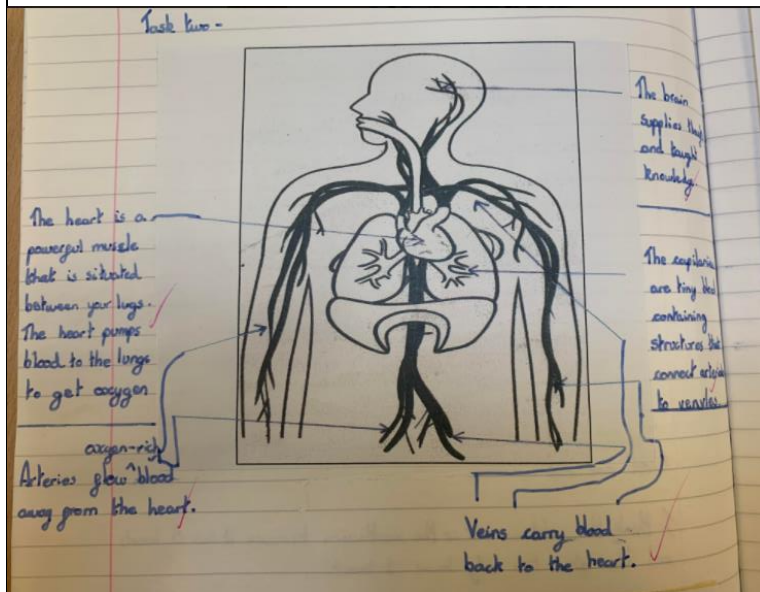


<b>Year Group: 6</b>	<b>Term: Spring 1/2</b> <b>Teacher: Sarah Wearing / Dionne Sinatti</b>	<b>Subject lead: Sarah Bride</b>	<b>Overview: Animals Including Humans.</b>	<b>Key End Points: By the end of this unit children will be able to:</b>	
<b>Common Misconceptions:</b> <b>Some children may think:</b> <ul style="list-style-type: none"> <li>• your heart is on the left side of your chest</li> <li>• the heart makes blood</li> <li>• the blood travels in one loop from the heart to the lungs and around the body</li> <li>• when we exercise, our heart beats faster to work the muscles more</li> <li>• some blood in our bodies is blue and some blood is red</li> </ul>		<b>Unit key Vocabulary:</b> Heart, pulse, rate, pumps, blood, blood vessels, transported, lungs, oxygen, carbon dioxide,	<ul style="list-style-type: none"> <li>• Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood.</li> </ul> <b>Spring 2:</b> <ul style="list-style-type: none"> <li>• Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function.</li> <li>• Describe the ways in which nutrients and water are transported within animals, including humans.</li> </ul> <div style="background-color: #e91e63; color: white; padding: 5px; margin-bottom: 5px;"> <b>Identifying, grouping and classifying</b>  <small>Making observations to name, sort and organise items.</small> </div> <div style="background-color: #00bcd4; color: white; padding: 5px; margin-bottom: 5px;"> <b>Pattern-seeking</b>  <small>Identifying patterns and looking for relationships in enquiries where variables are difficult to control.</small> </div> <div style="background-color: #004a80; color: white; padding: 5px; margin-bottom: 5px;"> <b>Comparative / fair testing</b>  <small>Changing one variable to see its effect on another, whilst keeping all others the same.</small> </div> <div style="background-color: #8bc34a; color: white; padding: 5px;"> <b>Research</b>  <small>Using secondary sources of information to answer scientific questions.</small> </div>	Children will learn and recall the parts of the circulatory system and explore the heart and blood in more detail. They will use books, iPad and technology to explore these in detail and explain the role of each part.	
<b>Links to other learning:</b>  DT – healthy eating	<b>Prior Learning:</b> <ul style="list-style-type: none"> <li>• Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene. <b>(Y2 - Animals, including humans)</b></li> <li>• Identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what</li> </ul>	<b>Future Learning:</b> <ul style="list-style-type: none"> <li>• The consequences of imbalances in the diet, including obesity, starvation and deficiency diseases. <b>(KS3)</b></li> <li>• The effects of recreational drugs (including substance misuse) on behaviour, health and life processes. <b>(KS3)</b></li> </ul>	<b>High Quality Text:</b>  <b>Pig-Heart Boy by Malorie Blackman -</b> Before reading this story in class be aware of children's sensibilities and different cultural beliefs as it does deal with a topic that some children may be sensitive to  <b>Scientist to study:</b>	<b>Risk Assessment:</b>  Be careful making holes in bottle tops.	<b>Teacher CPD:</b>  Reach Out CPD - <a href="https://www.reachoutcpd.com/">https://www.reachoutcpd.com/</a> sign up for free.  ASE Plan Muharem work.

	<p>they eat. <b>(Y3 - Animals, including humans)</b></p> <ul style="list-style-type: none"> <li>Describe the simple functions of the basic parts of the digestive system in humans. <b>(Y4 - Animals, including humans)</b></li> <li>Identify the different types of teeth in humans and their simple functions. <b>(Y4 - Animals, including humans)</b></li> </ul>	<ul style="list-style-type: none"> <li>The structure and functions of the gas exchange system in humans, including adaptations to function. <b>(KS3)</b></li> <li>The mechanism of breathing to move air in and out of the lungs. <b>(KS3)</b></li> <li>The impact of exercise, asthma and smoking on the human gas exchange system. <b>(KS3)</b></li> </ul>	<p><b>William Harvey</b> (Doctor who discovered the nature of blood circulation and the function of the heart as a pump)</p> <p><b>Ruth Ella Moore</b> - search document for information (Bacteriologist who researched immunology, blood groups and tuberculosis)</p> <p><b>Santorio Santorio</b> (Doctor who invented an instrument to measure pulse accurately using a pendulum and did the first scientific study of the metabolism)</p>			
<p><u>Learning Intention</u></p>	<p><u>Lesson Outline</u> (Key Questions in colour)</p>			<p><u>Resources</u></p>	<p><u>Vocabulary</u></p>	<p><u>Lowest 20% Adaptations</u></p>
<p>1 L.I I can name and describe the functions of the main parts of the circulatory system.</p>  	<p><b>This is a Science lesson. In Science, we study nature and the behaviour of natural things. The skill we will be using this lesson is making observations and communicating information.</b></p> <p><b>Recap:</b></p> <p><b>What do we already know about the human body?</b> – use prior learning above as question prompts if needed.</p> <p><b>How do humans stay healthy?</b></p> <p><b>Can you name the parts of the digestive system?</b></p> <p>Assess knowledge of key unit words using the traffic light system – extension write definitions for green vocabulary.</p> <p><b>Pre topic Assessment – Big Question: what do you already know about the circulatory system?</b></p> <p>Task: Draw a picture of what you think the inside of your body looks like and label any organs associated with the circulatory system.</p> <p>Prompt questions to support discussions:</p> <ul style="list-style-type: none"> <li><b>Which parts of the body are involved in the circulatory system?</b></li> <li><b>Why do we need blood in our bodies?</b></li> <li><b>What else do you know about the circulatory system?</b></li> </ul> <p><b>Word of the Week:</b> Circulatory system – use secondary sources to research and write a definition in books. – provide the children with iPad and a range of books about the circulatory system to write a definition.</p> <p><a href="https://thehumanbodygame.co.uk/">https://thehumanbodygame.co.uk/</a> - use this interactive resource to show the children the major parts of the human circulatory system. Identify the heart, arteries, veins, capillaries and blood.</p> <p><b>Role play</b> – the circulation game see resources.</p>			<p>Ipads, books, body template sheet.</p> <p>Circulation game resource.</p>	<p><b>Circulatory system, heart, veins, arteries, capillaries, blood.</b></p>	

**Task 1:** Write a short paragraph to explain what the circulatory system is and what its function is in the human body.

**Task 2:** Label the five main parts of the circulatory system and explain their functions.



2 L.I. I can explain in detail the function of the heart



**This is a Science lesson. In Science, we study nature and the behaviour of natural things. The skill we will be using this lesson is communicating information**

**Prior learning: What have we found out about the circulatory system?**

**Can you name any main parts? Can you explain their functions?**

**What is the role of the heart in the circulatory system?**

**Big question: What is the function of the heart?**

Allow the children to place their hand over their chests. Ask them what they can feel. The children can do this again after jogging on the spot for 30 seconds. Ask them to discuss what is happening.

How the heart works - <https://www.bbc.co.uk/bitesize/clips/zncq9j6>

To build our heart model we used:  
3 x Pop bottles (710 mL) with caps, labels removed.  
4 x Bendy straws  
3 Cups of water

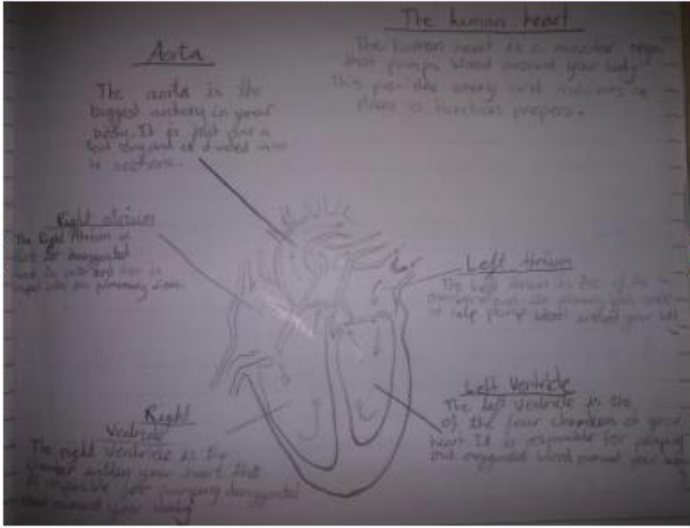
**Heart, pulse, rate, pumps, blood, blood vessels, transported, lungs, oxygen**

Children can explore the virtual t-shirt to learn more about the heart. You may need/want to refer back to <https://thehumanbodygame.co.uk/>

**Make a heart– Demonstration** - <https://www.steampoweredfamily.com/activities/heart-model-heart-stem/> . Take photographs as evidence.

**Recording;** Draw a human heart and use labels to name key parts and explain each function. Ensure the children that oxygenated blood is pumped around the body and deoxygenated blood is pumped to the lungs.

**Challenge:** name three things that are good for the heart and three that are bad.

EVIDENCE OF LEARNING	ASSESSMENT
Examples of work	Knowledge
	<p>Although there is a lot of vocabulary in this work, it is not clear from this whether Muharem understands that the oxygenated blood is pumped around the body and the deoxygenated blood is pumped to the lungs.</p>
	Working scientifically

Food colouring  
Tape  
Modeling clay  
or play dough  
Drill (or other sharp pokey for making holes in the caps)

3 L.I. I can set up a comparative test and present my data using a bar chart.

**This is a Science lesson. In Science, we study nature and the behaviour of natural things. The skill we will be using this lesson is setting up a test to answer questions, observing and taking measurements.**

**Recap: What are the main parts of the circulatory system?**

**What is the role of the heart?**

**How does the heart pump blood around our bodies?**

Standing on the shoulders of giant's resource for information.

**Heart, pulse, rate, pumps, blood, blood vessels, transported**



**Explorify Odd One Out – Get your Blood Pumping** - <https://explorify.uk/en/activities/odd-one-out/get-your-blood-pumping>

**Big Question: How do we measure our pulse rate?**

**Word of the week:** pulse rate – children discuss and write a definition.

Share the work of Santorio Santorio using the resource from – standing on the shoulders of giants. Explain to the children that he invented an instrument to measure pulse rate accurately.

Using pulse rate monitors ask the children to take their own pulse rate and find the average beats per minute. Use this to create a class set of data. Use the table of results to create a bar chart to show the information. Ensure they think carefully about the scale.

**Reflection:** can we be sure this is accurate information? How can we make it more accurate? Discuss

**Word of the week:** What is 'pulse rate'?

**Task (Maths link)**

1. Read the instructions of how to take your own pulse rate and find the average beats per minute.
2. Look at the class set of data. Use this to complete the table of results below and create a bar chart to show the information. Think carefully about your scale and make sure you label the x and y axis and write a title for your chart.

Average Pulse Rate (bpm)	Tally	Frequency
69 and below		2
70-74		
75-79		4
80-84		3
85-89		
90-94		
95-100		4
101-104		1
105 +		1

**Reflect?**  
Can we be sure this is accurate information? How can we make it more accurate? Discuss.

**Task one -**

Beats in 30s	Beats in 1 min
39	78
47	94
48	96
49	98
42	84

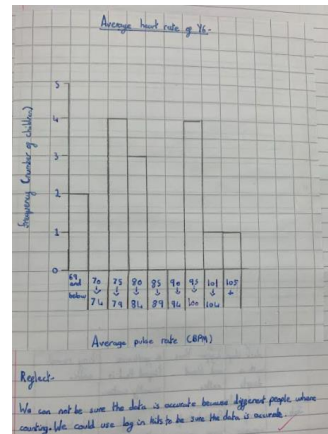
$$\begin{array}{r} 39 + 134 \\ + 47 + 49 \\ \hline 134 \end{array}$$

$$\begin{array}{r} 78 + 268 \\ + 94 + 98 \\ \hline 268 \end{array}$$

$$\begin{array}{r} 0.45 \\ 5 \overline{) 2.25} \end{array}$$

$$\begin{array}{r} 0.90 \\ 5 \overline{) 4.50} \end{array}$$

Total = 135  
My average heart rate per minute is 90 beats.



**Exit Pass:** Pattern Seeking: Look at the heart rate resource which shows the average heart rate of different people. **What patterns can you find?** E.g. a babies heart rate is faster than an adults, men have a lower heart rate on average than women. **What effect does being an athlete have on your average heart rate**

Pulse monitors.

, lungs, oxygen





4

L.I. I can name the component

**This is a Science lesson. In Science, we study nature and the behaviour of natural things. The skill we will be using this lesson is making observations.**

Ruth Ella Moore

**Red blood cells,**

	<p>s of blood and identify their function.</p>  	<p><b>Recap: What did Santorio Santorio invent?</b></p> <p><b>What are the main parts of the circulatory system?</b></p> <p><b>How and why does the heart pump blood around the body?</b></p> <p><b>Explorify</b> – zoom in zoom out – Red Doughnuts - <a href="https://explorify.uk/en/activities/zoom-in-zoom-out/red-doughnuts">https://explorify.uk/en/activities/zoom-in-zoom-out/red-doughnuts</a></p> <p><b>Big Question: what is blood?</b> <a href="https://www.youtube.com/watch?v=qrE6Y0Se8bw">https://www.youtube.com/watch?v=qrE6Y0Se8bw</a> <a href="https://thehumanbodygame.co.uk/&amp;pages/cvs/info-cvs-blood">https://thehumanbodygame.co.uk/&amp;pages/cvs/info-cvs-blood</a></p> <p>Share the work of Ruth Ella Moore – see resources</p> <p><b>Task 1:</b> using what you have found out about the different components of blood record their appearance and function in a table. Provide children with images to use in their tables or they may want to draw them.</p> <p><b>Task 2:</b> making your own artificial blood sample.</p> <p>Record using pictures with a post it note reflection pupil voice comment.</p>	<p>information sheet.</p> <p>Test tubes</p> <p>Vegetable oil, syrup, red food colouring, milk.</p>	<p><b>White blood cells, plasma, platelets.</b></p>	
5	<p>L.I. I can investigate and explain how exercise affects pulse rate.</p>  	<p><b>This is a Science lesson. In Science, we study nature and the behaviour of natural things. The skill we will be using this lesson is observing, measuring and recording data.</b></p> <p><b>Recap: what are the components of blood?</b></p> <p><b>What is the job of white blood cells? Platelets?</b></p> <p><b>What are the main parts of the circulatory system?</b></p> <p>Go back to the pre- topic assessment diagram – ask the children to spend 5 minutes adding to their diagram to include labels and information about what they now know about the circulatory system –use green pen to show the difference and progression in knowledge.</p> <p><b>Big Question: How does exercise effect heart rate?</b></p> <p>Use the Oak Academy video and quiz to recap prior knowledge about the circulatory system.</p> <p><b>Task:</b> measure your heart rate before and after a short exercise session, 30 secs and 1 minute. Record results in a table. Ask the children to explain what they notice. Heart rate increased after exercise - <b>Can they explain why this has happened?</b></p> <p>Complete the mini project challenges (CGP resources), which asks the children to interpret graphs to explain the effect exercise has on pulse rate.</p> <p><b>Exit Pass:</b> assess knowledge of key unit words using the traffic light system – extension write definitions for green vocabulary.</p>	<p>Oak Academy lesson – How is oxygen transported around our bodies?</p> <p>Stop watch, pulse monitor.</p> <p>Mini project CGP resources.</p>	<p><b>Heart, pulse, rate, pumps, blood, blood vessels, transported , lungs, oxygen, carbon dioxide, muscles.</b></p>	