

## LESSON PLAN

**CLASS : X**

**SUBJECT: Biological Science**

**Name of the Teacher :**

**Name of the School:**

Name of the Lesson/Unit	Topic	No. of Periods Required	Time line for teaching		Any specific Information
			From	To	
Transportation	Transportation in Human beings	5			Information about cardiac problems and heart transplantation from pig. World heart day – 29 <sup>th</sup> September
	Lymphatic system	1			
	Evolution of the transport system	1			
	Blood pressure and Coagulation of blood	1			
	Transport of materials with in the plant	2			

<b>Prior Concept/ Skills:</b> <i>(Essential concepts and skills to be checked/bridged before teaching the current concept.)</i> Heart, Heartbeat, blood and its components, blood vessels, B.P, xylem, phloem	
<b>Learning Outcomes:</b> <i>( Select from SCERT Academic Calendar and Textbook)</i> <ol style="list-style-type: none"> <li>1. Differentiates arteries and veins, xylem and phloem.</li> <li>2. Classifies organisms based on type of circulatory system.</li> <li>3. Plans and conducts investigations / experiments to observe the structure of mammalian heart, root hairs and root pressure.</li> <li>4. Relates pulse rate with heartbeat, Blood pressure with heartbeat, Osmosis, root pressure and transpiration with transport of water in plants.</li> <li>5. Explains processes of transportation in plants and animals.</li> <li>6. Draws labelled diagrams / flow charts / concept maps such as structure of heart, flow of blood in Circuits.</li> <li>7. Analyses and interprets data/ graph regarding heart size and rate of heart beat, heart beat and pulse rate.</li> <li>8. Applies learning to hypothetical situations, such as what happens - if valves in veins are absent, Cell sap of root hair cells contain less concentration ions.</li> <li>9. Applies scientific concepts in daily life and solving problems, such as hypertension and edima.</li> <li>10. Takes initiative to know about scientific discoveries / inventions such as contributions of laennec, Fabrici, Harvey, Malpigi etc,.</li> </ol>	<b>No. of Periods:</b> <b>10</b>

## TEACHING LEARNING PROCESS

### **Induction/Introduction** *(Generating interest, informing students about the outcomes and expectations for the lesson)*

I will introduce this topic by interacting with the students and testing their previous knowledge in the following way -

We know that the cells in our body needs food and oxygen to generate energy. What carries the digested food from digestive system to the cells?

What carries oxygen from lungs to the cells?

Are there any other substances that are being carried by our blood?


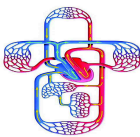
How the blood circulates in our body?

How the materials are transported in the plant body?

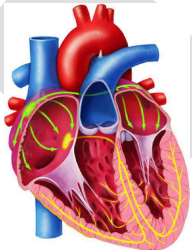
### **Experience and Reflection** *(Task/question that helps students explore the concept and connect with their life)*

- Collect information about blood pressure of your school teachers or your neighbours prepare a report on their health problems.
- Compare the transport system with the water supply system in your house.
- Collect information from a cardiologist about heart problems.

#### **Explicit Teaching/Teacher Modelling** *(I Do)*

- Discussion and picture illustration on structure of heart.
  - Make the students prepare the sentences to differentiate arteries and veins using table -2 given in the text book.
  - Discussion and picture illustration on cardiac cycle.
  - Discussion and picture illustration on Single / double circulation.
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- Discussion and picture illustration on lymphatic system.
  - Discussion on evolution of the transport system.
  - Discussion on Blood pressure.
  - Discussion coagulation of blood.
  - Discussion on transport of materials with in the plant.
  - Discussion on mechanism by which the water travel through the plants.
  - Discussion on transport of mineral salts.
  - Discussion on transport of manufactured food.

#### **Group Work (We Do)**

- Conduct a seminar on Contribution of different scientists in understanding the structure of heart, blood vessels
  - Counting the pulse (Activity – 1)
  - Making of matchstick stethoscope (Activity -2)
  - Counting the heart beat with paper tube and comparing it with pulse rate (Activity -3)
  - Observation of mammalian heart (Lab activity)
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- Observing root hairs (Activity -4)
  - Observing root pressure (Activity -5)
  - Preparation of a questionnaire to interview a cardiologist regarding cardiovascular problems.

#### **Independent Work (You Do)**

- Draw the charts showing structure of heart.
- Prepare a matchstick stethoscope and modal of stethoscope.
- Using a flow chart showing blood flow in the human body and make the students prepare their own notes on it in their own sentences
- Prepare flow charts showing single and double circuit circulations and coagulation of blood
- Prepare a block diagram showing from water absorption by roots to transpiration by leaf.
- Group discussion on cardiac problems and life style diseases.

Check For Understanding Questions	TLMs (Digital + Print)
<p><b>1. Factual:</b></p> <ul style="list-style-type: none"><li>What is the rate of heart beat in new born child?</li><li>What is lymph?</li><li>Give example for open type of circulatory system.</li><li>What is the normal blood pressure of the human beings?</li><li>Which processes are helpful in transportation of water in plants?</li></ul> <p><b>2. Open Ended / Critical Thinking:</b></p> <ul style="list-style-type: none"><li>What will happen, if pulmonary artery was blocked?</li><li>If the valves in veins of the legs fail to stop the flow of blood what could be the consequences?</li><li>What will happen, if there is no lymphatic system in the body?</li><li>What will happen if cell sap of root hair cells contain high concentration of ions?</li></ul> <p><b>Student Practice Questions &amp; Activities</b> (<i>Exercises from workbook / textbooks/ blackboard</i>)</p> <ul style="list-style-type: none"><li>What is transport system? How this helps to the organism?</li><li>What is root pressure? How it is useful to the plant?</li><li>How can you prove that the water is transported through the xylem?</li><li>Prepare a block diagram showing from water absorption by roots to transpiration by leaf.</li></ul>	<p>Diksha resource: <a href="https://diksha.gov.in/play/content/do_431343628414872780812162">https://diksha.gov.in/play/content/do_431343628414872780812162</a> language lab pen drive resource. Some of the other digital resources are: <a href="https://youtu.be/E2OofgrxPMo">https://youtu.be/E2OofgrxPMo</a> <a href="https://youtu.be/IrTOSHZzpAU">https://youtu.be/IrTOSHZzpAU</a> <a href="https://youtu.be/SdIPLLu5LWA">https://youtu.be/SdIPLLu5LWA</a> <a href="https://www.youtube.com/watch?v=ryGU0i1dRtc&amp;list=PLTmqBmlRAx4Co6EzI_-bdSQ4jD6FbG4pi">https://www.youtube.com/watch?v=ryGU0i1dRtc&amp;list=PLTmqBmlRAx4Co6EzI_-bdSQ4jD6FbG4pi</a> Heart modal, Circulatory system chart, Picture of Fabrici, Harvey, Malpighi Lymphatic system chart, Xylem and phloem chart, Match stick, button, Heart of a goat, Soda straws, Scalpel, tray, Jug of water, Dissection scissors, forceps, Sphygmomanometer, germinating seeds, filter paper, hand lens, slides, cover slip, microscope, Potted plant, glass tube, rubber tube, clamp etc., Intermediate botany and zoology text books.</p>
<p><b>Assessment</b> (<i>Think of what children SAY, DO and MAKE while learning that can form the evidence of learning to be used for assessment</i>).</p> <ol style="list-style-type: none"><li>Write the differences between the blood vessels that bring blood to the heart and that carry blood away from the heart.</li><li>Find the odd one from the following. A) Earthworm B) Human being C) Cockroach D) Frog</li><li>What are the materials required to observe the structure of mammalian heart?</li><li>Why the blood pressure is more in arteries than in veins?</li><li>Explains the way how plants get water through root hairs?</li><li>Draw the flow charts to show the flow of blood in single and double circulations.</li><li>Analyze the given graph and answer the questions.<ol style="list-style-type: none"><li>What is the relation between the heart beat and the pulse?</li><li>Can we say, the pulse is always equal to the heart beat? Why?</li></ol></li><li>What happens, if Cell sap of root hair cells contain less concentration ions?</li><li>Your grandfather has to travel by bus from Vishakhapatnam to Tirupati. What precautions you would suggest him about edima?</li><li>In 1661, a scientist studied the wings of bats. He could see blood vessels in their thin membranes under the microscope. He could see that the smallest arteries and veins were connected by very fine blood vessels. He called these blood vessels as “capillaries”. Who is that scientist?</li></ol>	

SIGNATURE OF THE TEACHER

SIGNATURE OF THE HEAD MASTER

VISITING OFFICER WITH REMARKS