



LET'S LEARN ABOUT BLOOD

a major classroom science and health resource
from the New Zealand Blood Service



**New Zealand
Blood Service**
The gift of life

Teacher Notes and Learning Intentions

In this science/health based unit we help our students learn about the cardiovascular system – one of the body's most important systems. Students will:

- find out that the circulatory system is made up of the heart, blood and blood vessels
- find out how the circulatory system delivers oxygen and nutrients to our body and picks up the waste products so the body can get rid of them
- learn how to keep our blood healthy by adapting healthy life choices
- find out about the New Zealand Blood Service and the gift that blood donors give to others
- encourages students to get the message of becoming blood donors across to parents, families, and the wider community.

What do we know about blood?



- Pose questions to help students find out what is the students' current knowledge about blood and the circulatory system, eg
 - why do we have blood?
 - how much blood do we have in our bodies?
 - does the blood stay still in our body or does it move around?
- Have students write down all the blood facts they know. Refer back to these at the end of the unit.
- Tell students that they will be studying the blood and circulatory system of their bodies. As a class, write a short list of facts and information they would like to find out during their study.

Let's find out about blood



- Have students use dictionaries to find the meaning of the following words:
 - blood
 - blood vessels
 - veins
 - arteries
 - cardiac
 - vascular
- Tell students that our cardiovascular system is simply a big name for the heart, blood and blood vessels found in our bodies.
- Allow groups sufficient time to all have a chance to view and listen to the flash animation on the web at the 'How Stuff Works' website at:
<http://health.howstuffworks.com/blood1.htm>
- Discuss and write a class summary of new facts they have found about our cardiovascular system.

TEACHER TASK

- Visit the following website and print out the Cardiovascular pages. Photocopy and distribute to class.

<http://yucky.kids.discovery.com/noflash/body/pg000131.html>

Curriculum: Health & Phys Ed, Science, Mathematics

Strands:

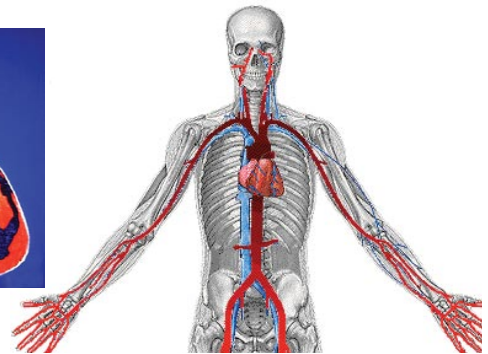
Personal Health and Physical Development
Healthy Communities and Environments
Making Sense of the Living World
Interpreting Data and Developing Accuracy in Number

Individual/group research

- Have students answer the following questions:

Our Circulatory System

- what makes up the circulatory system of the body?
- what 'good things' does blood deliver to every part of the body?
- what products does blood pick up so our bodies can get rid of them?



Our Heart

- about how big is your heart?
- what does our heart – as a muscle, do about 70 or so times a minute when we are resting?

Our Blood Stream

- how does the heart make the blood travel around the body?
- what is the name given to the tubes that carry the oxygen and nutrients away from the heart?
- what is the name given to the tubes that carry the blood more gently back to the heart?
- what name is given to the small branched tubes that make sure all our body receives blood?

How Our Blood Gets Oxygen

- how does the blood get to our lungs?
- how do we get oxygen in our lungs?
- what do we call blood that has been just mixed with oxygen?
- what does the blood deliver to every cell in the body – including bones, skin and other organs?
- after delivery of oxygen to the body cells, what task do the veins do?



OUR CIRCULATORY SYSTEM

research continued ...-

What is Blood Anyway

- what is most of our blood made up of?
- what jobs do red and white blood cells carry out for our body?
- What task do the blood platelets perform?
- what really makes the sound we call the heartbeat?

Blood Factoid Maths Teasers

- there are 60,000 miles of blood vessels in our bodies. Convert these to kilometres (multiply x 1.6 for an approximate answer)
- approximately how many times will your heart beat
 - in a day
 - in a week
 - in 10 years
- how much more blood (on average) will 10 adults have in their bodies compared with 10 X 3 year-olds?



Let's Learn More

What Does Our Heart Do?

- Ask students if they have ever felt or heard their heart beating. Remind students that the heart is a muscle about the size of a fist and that it acts as a pump to shift the blood around the body.
- To illustrate this, have students open and squeeze shut their fists about once every second. Can they keep this up for over a minute? Point out that this is what the heart will be doing for the rest of their lives.

Exercise is Good

- Have any students felt or heard their heart beat? Tell students that doctors and medical people can listen to the heart using a stethoscope. Make cardboard tubes and have students listen to each others hearts.
- Do students know what happens to the heart rate after exercise? Show students how to take each others pulse – first after resting and then after one minutes strenuous exercise. Can they give reasons for the increase in heart rate? **eg** –the body needs more oxygen so the heart speeds up so the blood can bring more oxygen to the cells and organs.
- Tell students that all muscles need exercise to remain strong. This is why regular exercise is necessary for keeping our heart healthy.

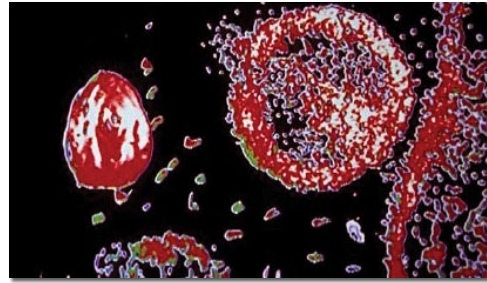
How Much Blood?

- Tell students that have about six litres of blood in their bodies. So students can get a better idea of how much this is, use 1 litre or 2 litre milk containers to pour this about into a larger container. Add red food colouring for extra effect!



Acting Out the Circulatory System

- Remind students that the red cells of the blood carry the oxygen and nutrients that the body needs. When it is rich in oxygen the blood is bright red. When it picks up the waste products it becomes bluish in colour
- Set up two stations on a circuit – the lungs, and the rest of the body. Have students move around the circuit picking up red discs at the lungs and dropping this off around different parts of the body. Pick up blue discs around the body and take back to the lungs. Increase and decrease the speed to simulate exercise.



- Conclude your the study by having students
 - draw a blood flow chart
 - take the online blood quiz at: www.vtaide.com/png/blood-mcq.htm

Keeping Our Blood Healthy

- Tell students that what we eat can make a big difference to keeping our blood and heart healthy.
- Have groups conduct online research at the visually exciting website: www.coolmeals.co.uk > **click on Food Facts > Click on Health > Select Healthy Blood** and answer the following questions:
 - what important part does iron play in keeping our blood healthy?
 - what does iron form in our blood to help carry oxygen around the body?
 - why should we eat red meat and what other foods can we eat to make sure we get iron?
 - how do we feel when our body doesn't get enough oxygen from the blood?
 - what is anaemia, how is it caused, how does it affect us and how do we prevent getting it?



Ask the Expert

- Invite a health professional to talk to the class about the circulatory system and how to keep it healthy.
- Ensure students are involved in preparing questions, **eg**
 - how does exercise keep our system healthy?
 - what foods keep our blood healthy?
 - what are main parts that make up the blood and what part does each play in keeping us healthy?
 - when we cut ourselves, what part of the blood stops the bleeding?
 - does blood do any other jobs apart from bringing oxygen, food and removing waste?



Recording What We Know

- Students demonstrate understandings of blood and the circulatory system by:
 - flow charts and sequential pictures
 - writing factual reports
 - designing posters promoting healthy blood
 - designing multi choice questionnaires
 - preparing and delivering oral/visual presentations
 - producing a 'good for the blood' recipe book
 - a promotional blood web page to the school site
 - performing a day in the life of the blood drama.

