



New Zealand Blood Service
Teaching Resource
Levels 3 and 4:
Save Lives – Give Blood

www.nzblood.co.nz

NZBLOOD
Te Ratonga Toto O Aotearoa

Save Lives – Give Blood

New Zealand Blood Service (NZBS) has developed a range of education resources linked to *The New Zealand Curriculum*. These resources provide engaging learning experiences on NZBS topics for teachers to use in the classroom. This resource focuses on developing students' awareness and knowledge of blood donation and how it helps others.

Curriculum links

The following tables include suggested curriculum links and achievement objectives. You are encouraged to adapt these to meet the needs of your students, the context for learning, and your school curriculum.

<p>Vision</p> <ul style="list-style-type: none"> connected and actively involved 	<p>Principles</p> <ul style="list-style-type: none"> community engagement future focus, particularly the future-focus issues of sustainability and citizenship
<p>Values</p> <ul style="list-style-type: none"> community and participation for the common good 	<p>Key Competencies</p> <ul style="list-style-type: none"> thinking – to make sense of information, experiences, and ideas participating and contributing – being actively involved in communities

Achievement objectives

<p>SCIENCE</p> <p>Nature of Science: <i>Understanding about science</i></p> <p>Levels 3 and 4</p> <p>Students will appreciate that science is a way of explaining the world and that science knowledge changes over time.</p>	<p>SCIENCE</p> <p>Living World: <i>Life processes</i></p> <p>Levels 3 and 4</p> <p>Students will recognise that there are life processes common to all living things and that these occur in different ways.</p>
<p>HEALTH AND PHYSICAL EDUCATION</p> <p>Personal Health and Physical Development: <i>Personal growth and development</i></p> <p>Level 3</p> <p>Students will identify factors that affect personal, physical, social, and emotional growth and develop skills to manage changes.</p>	<p>HEALTH AND PHYSICAL EDUCATION</p> <p>Healthy Communities and Environments: <i>Community resources</i></p> <p>Level 4</p> <p>Students will investigate and/or access a range of community resources that support well-being and evaluate the contribution made by each to the well-being of community members.</p>

Assessment for learning

The resource supports formative assessment. It does not include assessment tasks but offers opportunities for students to reflect on their learning and understanding of the concepts and information presented in the activities.

Science and Health classroom activities

The following classroom activities may be taught sequentially. However, you are encouraged to select and adapt the activities to meet the learning context, and the specific needs, interests, and experiences of your students – taking into consideration any students who may have family or whānau that are unwell, and those who do not accept transfusions.

What is a blood transfusion?

Explain that when people have lost a large proportion of their blood or have very low levels of blood cells, they may need a blood transfusion or a transfusion of some blood components. Ask: “Have you or a member of your family/whānau had a blood transfusion? How did it help?” Discuss situations where people may need a transfusion.

Why do people need blood?

Have the students think-pair-share about why people need blood. Record their responses on a wall chart under the headings: who/when/why. Select one of the NZBS digital texts to share with the class: *Amazing Blood*, *What’s the Difference?* or *Take Action* (<http://www.nzblood.co.nz/Education/Teaching-Resources/Digital-Resources>). Have the students use the “Blood types retrieval table” graphic organiser to take notes about blood types, transfusions, who needs transfusions, and blood donors as you read the text.

Know your type

Ask: “If you need a blood transfusion can it just be any blood?” Select information from the “Blood types” factsheet to share with the class. Discuss blood types. Ask: “Does anyone know what their blood type is?” Discuss: “What do you think would happen if you were given a blood type that didn’t match your own?” Have the students use the blood groups chart on the factsheet to play the Blood Typing Game (<http://www.nobelprize.org/educational/medicine/bloodtypinggame/index.html>).

Where does the blood come from?

Introduce the concept of blood donation. Investigate the NZBS website (<http://www.nzblood.co.nz/Give-blood/Donating/Am-I-eligible>) to find out when you can become a donor and what the criteria are. Facilitate a class discussion about the reasons why people would or would not donate blood. Read the “Why should I donate blood?” page on the NZBS website (<http://www.nzblood.co.nz/give-blood/donating/why-should-i-donate-blood/>). Have the students add information to their graphic organiser.

Who gets the donated blood?

Find out about NZBS and the “gift” blood donors give. Have the students select one of the donor stories from the NZBS website (<http://www.nzblood.co.nz/amazing-stories/>). Record any new information on the graphic organiser.

Survey

Have the students survey their family, whānau, friends, and neighbours to find out how many people have:

- needed a transfusion
- donated blood (and their reasons for donating)
- have never donated blood (and their reasons for not donating).

Collate and discuss the results. Ask: “What do the results tell us? How does the information compare with the percentage of people in New Zealand who are blood donors?”

Talk with an expert

Invite a NZBS Donor Recruiter to talk about the Blood Service, the eight different types of blood, the donation process, and the different blood products and what they are used to treat.

Possible assessment activity

Have the students create a poster or PowerPoint presentation to assess their understanding of the benefits of blood donation and how it helps others.

Factsheet: Blood groups (types)

Discovery of blood groups/types

In 1901, medical doctor and scientist, Karl Landsteiner, reported that blood could be classified into blood “groups” (or types). He named his system the ABO blood group system. This discovery meant that successful blood transfusions could take place.

Blood transfusions

Blood donations are carefully collected and tested. The blood is separated into components: red cells, plasma, and platelets, because they need to be stored at different temperatures. The blood and blood components are stored in blood banks until used in a transfusion.

A blood transfusion occurs when a blood component from a healthy donor is transferred to a sick person.

Blood transfusions are often given to a person who has severe bleeding and has lost a lot of blood after an injury or surgery, or who has a disease that stops the body making blood cells or plasma proteins.

Blood groups

Everyone’s blood has the same basic components (red cells, white cells, platelets, and plasma). But not everyone has identical blood groups on the surface of their red blood cells.

Many different blood group systems exist and each blood group system has several different blood groups.

Occasionally a person who has received a blood transfusion may make an antibody against a blood group that is different from one of their own blood groups. This will only happen if a blood group of the transfused red blood cells is not identical to the person’s own blood group.

Antibodies are needed to fight infections but an antibody that attacks a blood group doesn’t provide any protection. Instead, the blood group antibody will cause the transfused red blood cells to be destroyed. Therefore, important blood groups are carefully matched with the patient’s blood groups so that antibodies are not produced.

		DONOR							
Type		O-	O+	B-	B+	A-	A+	AB-	AB+
RECIPIENT	AB+								
	AB-								
	A+								
	A-								
	B+								
	B-								
	O+								
	O-								

The two most important blood group systems

The ABO blood group system discovered by Landsteiner has three blood group antigens that can be combined in four ways.

1. Group A has A antigens on the red cells.
2. Group B has B antigens on the red cells.
3. Group AB has both A and B antigens on the red cells.
4. Group O has no A or B antigens on the red cells.

Rh is the second most important blood group system. People can either be RhD positive or RhD negative. The Rh system is also very important when matching blood groups for blood transfusions.

RhD negative patients shouldn’t receive RhD positive red cells as this will cause their body to make antibodies that react with RhD. These antibodies are called anti-D.

O negative blood donors have the blood group O of the ABO system and RhD negative of the Rh system. They are known as “universal donors” because their red cells can be transfused into people with any ABO and RhD blood type.

Graphic organiser: Blood types retrieval table

<p>Blood types are ...</p>	<p>To be a blood donor you ...</p>
<p>Transfusion is ...</p>	<p>People need transfusions when ...</p>