

LESSON V-4: Blood

Student Learning Objectives:

- V-8. Students will list the components of blood: plasma, red blood cells, white blood cells, and platelets.
- V-9. Students will describe the functions of red blood cells, white blood cells, and platelets.
- V-10. Students will explain the ways white blood cells fight germs.

Preparation

- Gather the needed materials.
- Read the Teacher Reference, *What Is Blood?*, for background information on blood.
- Duplicate enough copies of the Student Worksheet, *Blood*, so that each student will have one.
- Determine which media is available for use with this lesson.
 - If you are using the filmstrip and cassette, *My Blood, Your Blood, His Blood, Her Blood*, duplicate the Student Worksheet, *Blood*, so that each student will have a copy.
 - If you are using the video, *All About Blood and the Heart*, duplicate the Student Worksheet, *In the Flow*, so that each student will have a copy.

Materials

Equipment

- Cassette player
- Filmstrip projector

Resources

- Filmstrip and Cassette: *My Blood, Your Blood, His Blood, Her Blood* (11 minutes) OR Video: *All About Blood and the Heart* (first 13 minutes)
- Student Worksheet: *Blood* OR *In the Flow*
- Teacher Key: *Blood* OR *In the Flow*
- Teacher Reference: *What Is Blood?*

Realia

- Pencils or pens

Time: 30 minutes

Lesson Procedure

Introduction: 5 minutes

Connect this lesson on blood with the previous lessons on cells.

1. Review the variety of cells that have been studied. State:

We have been studying cells. Think of three different kinds of cells you have seen or heard about during our study of cells. When you have thought of three, hold up three fingers. [pause] Turn to your neighbor and share your ideas.

2. Gather some of the students' ideas. List some of the cells on the chalkboard, such as skin cells, muscle cells, nerve cells, plant cells, etc. Point out:

We remembered quite a variety of cells. Do all these cells look alike? [no] Why do different cells have different shapes? [They each have a special job to do, so their shape depends on their job.]

3. If blood cell was listed, circle it on the chalkboard. If not, write the words "blood cells" on the chalkboard and circle them. State:

Today we will look at blood cells and the jobs they do.

Activity 1: 22 minutes

Identify the different parts of blood and their functions.

1. Write the word "blood" on the chalkboard and state:

Blood has four major parts. If you think you know one of the parts of blood, stand up. Let's see if we can name some of them. [plasma, red blood cells, white blood cells, and platelets]

Call on students to share their answers.

Teacher's Note: One of two media is available for use with this lesson. If you have the filmstrip and cassette, *Your Blood, My Blood, His Blood, Her Blood*, follow Option 1. If you have the video, *All About Blood and the Heart*, follow Option 2.

Option 1

2. Distribute the Student Worksheet, Blood, to each student. Explain:

In a moment, we are going to watch a filmstrip about blood. The filmstrip is called My Blood, Your Blood, His Blood, Her Blood. As you watch it, you may fill out your worksheet. Let's read it, so we will know what to listen for.

Call on students to read the items to the class.

3. Show the Filmstrip *My Blood, Your Blood, His Blood, Her Blood*.

Option 2

2. Distribute a Student Worksheet, In the Flow, to each student. Explain:

In a moment, we are going to watch a video about blood. The video is called All About Blood and the Heart. As we watch it, you may fill out your worksheet. Let's read over the worksheet before we watch it, so we will know what to listen for.

3. Show the first 13 minutes of the video, *All About Blood and the Heart*. Stop the video before the explanation of the heart begins.
4. Discuss the filmstrip or video by asking:
What did you learn about blood, that you didn't know before?
What did you enjoy most about the filmstrip/video?
5. Ask the students to find a partner and finish the worksheet. Tell the students they will have five minutes to complete it.
6. Go over the answers and discuss any questions with which the students had trouble.

Closure: 3 minutes

- Summarize by asking:
- *What are the four major parts of blood?* [plasma, red blood cells, white blood cells, and platelets]
- *What do the red blood cells do?* [They carry oxygen from the lungs to the rest of the body. They carry carbon dioxide waste from the body cells to the lungs.]
- *What do the platelets do?* [They stop bleeding by plugging holes in the blood vessels and by forming scabs on sores.]
- *What do white blood cells do?* [They keep our bodies free of germs. They kill and eat germs. They make antibodies.]

- State:

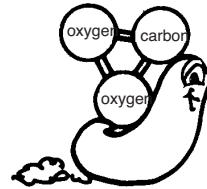
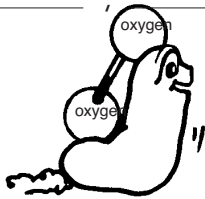
Our next health lesson will teach us more about the ways our bodies fight germs.

BLOOD

1. The major parts of blood are _____ , _____ ,
_____ , and _____ .

2. Red blood cells are produced in _____ .

3. Red blood cells carry _____ from the lungs deep into the body to
_____ , _____ , and tissues.



4. From deep in the body, the red blood cells carry _____ back
to the _____ .



5. The primary job of _____ is to plug up holes in blood vessels and
capillaries with _____ and to build scabs on cuts and sores.

6. White cells give their lives to keep our bodies free of dangerous germs. They eat
these germs and create _____ which stay in the body for the rest of our
lives. These _____ remember the germs and attack as soon as
the germs come again. This is called being "immune" to the germs.



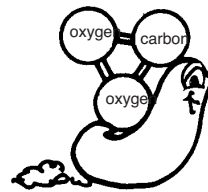
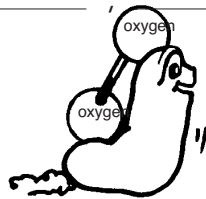
Drawings reproduced courtesy of
Puget Sound Blood Center and artist Terry Tennesen.

BLOOD

1. The major parts of blood are plasma , red blood cells ,
white blood cells , and platelets .

2. Red blood cells are produced in bone marrow .

3. Red blood cells carry oxygen from the lungs deep into the body to
muscles , organs , and tissues.



4. From deep in the body, the red blood cells carry carbon dioxide back
to the lungs .



5. The primary job of platelets is to plug up holes in blood vessels and
capillaries with fibrinogen and to build scabs on cuts and sores.

6. White cells give their lives to keep our bodies free of dangerous germs. They eat
these germs and create antibodies which stay in the body for the rest of our
lives. These antibodies remember the germs and attack as soon as
the germs come again. This is called being "immune" to the germs.



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In the Flow



1. What is always flowing through your body? _____

2. Your “living, liquid delivery system” carries three things to your body and one thing away from your body:

To: _____, _____, _____

Away: _____

3. The major parts of blood are _____, _____, _____, and _____.

4. Red blood cells carry _____ to the body and carry away carbon dioxide for the lungs to breathe out.

5. White blood cells are like _____ because they protect us from invaders called _____.

6. Platelets go to cuts so they can _____ to make a scab. This is called _____.

In the Flow

1. What is always flowing through your body? blood

2. Your "living, liquid delivery system" carries three things to your body and one thing away from your body:

To: oxygen, water, food(nutrients)

Away: waste

3. The major parts of blood are plasma, red blood cells,
white blood cells, and platelets.

4. Red blood cells carry oxygen to the body and carry away carbon dioxide for the lungs to breathe out.

5. White blood cells are like security guards
because they protect us from invaders called germs.

6. Platelets go to cuts so they can stick together
to make a screen. This is called clotting.

WHAT IS BLOOD?

Red Blood Cells...

- ...are also called erythrocytes.
- ...are shaped like biconcave discs.
- ...have no nucleus, which is unusual for living cells.
- ...only live 120 days, so they must constantly be replenished.
- ...are made in bone marrow.
- ...determine a person's blood type.
- ...carry the oxygen or carbon dioxide throughout the body.
- ...have hemoglobin, a molecule within the cell which carries oxygen to the cells of the body, gives the blood its red color, and needs a molecule of iron in order to be made. If a person doesn't get enough iron in the diet, he/she cannot produce enough red blood cells. When this happens, the person is anemic and looks pale.

White Blood Cells...

- ...are also called leucocytes.
- ...there are five types. Each one has special functions.
- ...have a nucleus.
- ...produce the antibodies which help fight infection.
- ...combat infection by destroying germs.
- ...engage in phagocytosis or "cell-eating," which destroys germs.
- ...are able to crawl through cell walls in their fight against germs.
- ...are produced in either the bone marrow or lymph.

Platelets...

- ...are also called thrombocytes.
- ...are disc shaped.
- ...start the process of blood clotting.
- ...are made in bone marrow.

Plasma...

- ...is the liquid part of blood. Blood is 92% water.
- ...is the straw-colored liquid.
- ...carries food to all the cells of the body.
- ...carries the antibodies that were produced by the white blood cells.
- ...contains the fibrinogen, which is also needed for blood clotting.
- ...contains various other chemicals which are needed for body functioning, such as electrolytes and protein.