Lower Elementary Interdisciplinary Thematic Unit
Grades K-2
ACKNOWLEDGEMENTS

We gratefully acknowledge America’s Blood Centers for their funding support of the *My Blood, Your Blood Interdisciplinary Thematic Unit*.

Manatee Community Blood Center is pleased to provide all materials to Manatee County Public Schools.

*Authors of lesson plans*
Jennifer E. Alexander, Manatee Community Blood Center
Karen R. Collins, Manatee County Public Schools
Maria Johnson, Manatee County Public Schools
Jeanie M. Olach, Manatee Community Blood Center
Carol Schellenger, Manatee County Public Schools

*Contributing Artists, Students from Manatee School for the Arts*
Instructor: Penny L. Parks
David M. Anderson
Tiphani M. Egan
Jonathan G. Jeffries
Ryland M. Jones
Jess N. Lockley
Blaine G. Martin
Johathan Mizner
Megan A. Pugh
Andrew C. Rimer
Jessica L. Willis

*Copyrighted characters and objects from the My Blood, Your Blood program:*
My Blood Your Blood program © 2000 The Foundation for America’s Blood Centers. All rights reserved.
My Blood Your Blood program characters, Rory®, Granville® and the Sticklers® are copyright© 2000 by Puget Sound Blood Center. All rights reserved.

*Proofreaders*  
Sandra Benedict  
Lucille Carbone  
Karen Collins  
Laurie Eckart  
Toni Gilbert  
Jennifer Jarolin  
Maria Johnson  
Mary Jean Logsdon  
Carol Schellenger  
Donna Singer  
Suzanne Wright  
Dick Wyke

*Content Consultants*  
Elaine M. Ackel  
Diana B. Davis  
Linda J. Lester  
Diane S. Pugh
ORGANIZING IDEA:

My Blood, Your Blood – My Lifeline, Your Lifeline

America’s Blood Centers developed the learning guide and produced the video and CD-ROM that accompanies the My Blood, Your Blood Interdisciplinary Thematic Unit. The program meets current National Science Education Standards set forth by the National Research Council and the National Academy for Sciences to increase science literacy of all students. In January, 2001, David Satcher, M.D., Ph.D., Assistant Secretary for Health and Surgeon General with the Department of Health and Human Services, endorsed America’s Blood Centers new and innovative science and education program, stating, “I applaud you for providing the nation with an entertaining and educational initiative for K-12 grade students.”

RATIONALE OF AN INTERDISCIPLINARY THEMATIC UNIT:

The Manatee Community Blood Center is challenged to educate our county effectively, ultimately affecting our donor recruitment and retention. We firmly believe that education is the key in recruitment, and in dispelling fears and false notions about blood donation. Schools are clearly a center of community life, crossing lines of ethnic diversity and financial background. Likewise, blood can be considered our physiological “center of the universe” since it carries out the essential functions of transporting nutrients and molecules, regulating our internal environment, and protecting us from disease. Through the My Blood, Your Blood Interdisciplinary Thematic Unit we can reach not only the students, but also their families, teachers, and the administration to instill the value of blood donation for personal and community health. We have centered this interdisciplinary thematic unit around the science and donation of blood. It is our intent to make the lessons meaningful, exciting, and challenging for all students. The My Blood, Your Blood Interdisciplinary Thematic Unit successfully meets all the Standards and their respective Outcomes of the Florida’s System of School Improvement and Accountability. The lessons’ objectives correlate with Kaleidoscope and Mosaic, Manatee County’s K-8 Curriculum, as well as the Sunshine State Standards.

My Blood, Your Blood is an exceptional program and the catalyst needed for a more in-depth and lasting partnership between Manatee Community Blood Center and the Manatee County Public School System.

UNIT FOCUS:

This interdisciplinary thematic unit will utilize activities to educate students about the science and donation of blood.
Table of Contents

An Introduction to the Lower Elementary School Unit 1
Unit Plan Grid 2
The Lesson Plans: Design and Intent 4

Lesson Plans
Lesson 1: Introductory Lesson 5
Lesson 2: The Circulatory System and the Heart as a Pump 8
Lesson 3: Four Basic Parts of Blood 15
Lesson 4: A Red Blood Cell’s Life 28
Lesson 5: Oxygen 46
Lesson 6: How a Scab is Formed 51
Lesson 7: The Role of the White Blood Cell 56
Lesson 8-10 Blood Center Microcommunity 61
Student Test (traditional evaluation): Grade 1 73
Student Test (traditional evaluation): Grade 2 74
Teacher Evaluation of My Blood, Your Blood Interdisciplinary Thematic Unit 76

Appendix
MCBC Mission Statement 78
Learning Center Procedures/Explanations 79
“The Path of Blood” 83
“Outline of the Heart” 84
“The Inside of a Bone” 86
“How Blood Gets from the Donor to the Patient” 87
“It Takes All Types to Save Lives” 88
“Blood Types and Frequency” 89
“Does Your Blood Type Reveal Your Personality?” 90
“What Good Is a Blood Donor?” 91
Parent Letter for Blood Donations 92
Amazing Facts about Blood 94
Math Fun Facts 95
Idiomatic Expressions 96
Animal Heartbeats 98
Blood Donor Sign-in Sheet (for school blood drive competition) 99
Acronyms 100
Acronyms with Definitions 102
Glossary/Vocabulary 107
Bibliography 111
Internet Resources 112
Recommended Reading 114
**My Blood, Your Blood**

An Introduction to the Lower Elementary School Unit

Welcome to the *My Blood, Your Blood Interdisciplinary Thematic Unit*. The daily lesson plans are directly linked to the *My Blood, Your Blood* video. By segmenting the video for daily viewing, students will explore and manipulate the content in manageable pieces.

Look at the Unit Plan Grid. You may want to meet with the K-2 grade-level teachers or chair people to determine whether each grade will do the entire curriculum, or what grades will cover specific portions of the curriculum.

**Literature**

Using pieces of literature may be helpful in drawing student interest for the unit. There is a suggested reading list in the Appendix. Your school media specialist may have other suggestions. Daily oral readings could be implemented as an opening or closing to each lesson, or during your regularly scheduled reading time for the day. Tie the story to the *My Blood, Your Blood* information for the day or week. The book you choose may be loosely based on the science of blood. For example, if you have chosen a book about a cancer patient’s experiences, be sure to discuss that cancer patients frequently have to receive platelet donations during their chemotherapy treatment schedule.

**Daily Journaling**

We have included daily opportunities for a journal entry. This can be as simple as making a list, copying something from the board, or brainstorming ideas. You may want to prepare students for this by asking them to bring in a separate notebook or have them make a notebook out of loose-leaf paper, yarn, and a manila file folder cover/back.

**Assessment Tools**

There is at least one opportunity per lesson for student assessment. It is up to the teacher’s discretion as to the evaluation rubrics. There are two traditional tests (grade 1 and grade 2) included. Because of the vast difference between kindergarteners, first, and second graders, there are options in many of the lesson plans for higher and lower levels of thinking. Feel free to adapt any activity as needed for your students.

**Learning Centers**

Please take a few minutes to read through the Learning Center Procedures/Explanations sheet provided in the appendix. You may choose to add a learning center every day and gradually build to the Microcommunity Center. Each lesson plan gives a suggested and appropriate learning center for that lesson’s skills. On the final days of the unit, all students could be involved in learning centers for part of the day.

**Appendix**

Use the appendix to customize activities and projects to your specific classroom situation. Coordinate activities to be grade-level specific. There is also a lot of information about the Manatee Community Blood Center (MCBC) services and procedures. This may be helpful information for you to share with your students or their parents.
# Unit Plan Grid

<table>
<thead>
<tr>
<th>Lesson</th>
<th>Objectives</th>
<th>Question</th>
<th>Activity/Evaluation</th>
<th>Center Activities</th>
</tr>
</thead>
</table>
| Introductory Lesson | 1. Students will engage in creative thinking through a brainstorming strategy.  
2. Students will identify the unit theme.  
3. Students will illustrate types of gifts that cannot be bought. | What is something you cannot live without? | Students write the name of a gift that cannot be bought and illustrate it. | Building Center: Trace your body, draw and paint your blood vessels.  
Writing Center: Create an invitation to a party and/or a thank you note for a gift. |
| #1 | | | | |
| #2 | 1. Students will engage in creative thinking through a webbing strategy.  
2. Students will identify various types of pumps.  
3. Students will identify the heart as their body’s special pump.  
4. Students will recognize the circulatory system as the body’s transportation system.  
5. Students will create illustrations comparing quantities of blood in a baby, child, and adult. | How does your blood move through your body? | Compare/contrast the amount of blood in a human baby, child, and adult | Art Center: “Heart Work”  
Science/Math Center: “Working Heart” |
| #3 | 1. Students will engage in creative thinking through a webbing strategy.  
2. Students will illustrate the four basic parts of blood: red blood cells, white blood cells, platelets, and plasma.  
3. Students will relate the “job” or purpose of each blood part.  
| #4 | 1. Students will engage in creative thinking through a sequencing strategy.  
2. Students will recall the sequence of a red blood cell’s life.  
3. Students will role-play or illustrate the life and death of a red blood cell. | Where is your blood made? | Kinesthetic activity: Students role-play the life cycle of a red blood cell.  
Science/Math Center: “What is inside of bones” activity |
| #5 | 1. Students will utilize creative thinking through responding to a drum beat.  
2. Students will identify the need for oxygen.  
3. Students will physically respond to and observe varying heart rates. | What is in the air that our blood needs? | Kinesthetic Activity: Oxygen movement game  
“Who needs more oxygen?” worksheet | |
| #6  | 1. Students will engage in creative thinking through a brainstorming strategy.  
2. Students will recall how a scab is formed.  
3. Students will recognize the importance of platelets and fibrin in the clotting process.  
   |   |   | When you cut yourself, what stops your cut from bleeding?  
   |   |   | Students create a scab on manila paper (using various materials that represent the blood parts).  

| #7  | 1. Students will engage in creative thinking through a sequencing map activity.  
2. Students will define the role of the white blood cell.  
3. Students will sequence the steps involved in eliminating germs from the body.  
4. Students will illustrate the concept of a white blood cell at work.  
   |   |   | How do you get better when you feel sick?  
   |   |   | Students will illustrate a white blood cell at work.  
   |   |   | Students will compose a rap based on white blood cells.  

| #8-#10 Blood Center Micro Community Activity.  
See Appendix for details.  
   | 1. Students will listen to a teacher explanation of blood donation and apply the information to a writing activity and the Microcommunity.  
2. Students will create an invitation to donate blood.  
3. Students will identify equipment used for blood donation.  
4. Students will engage in creative thinking through a brainstorming strategy.  
5. Students will identify and perform the various roles within the blood center organization.  
6. Students will follow procedures as they role-play.  
7. Students will interact appropriately with each other according to their role.  
8. Students will listen and be attentive to each other.  
   |   |   | How is blood a gift?  
   |   |   | Students create a blood center in the classroom, role-playing each step of the donation process.  
   |   |   | At this point, all center activities should be in place. Students may rotate between all centers, including this Microcommunity center for reinforcement on the unit’s contents.  

The Lesson Plans: Design and Intent

Each lesson contains the following sections:

**Opening Question…** The premise for the lesson is encompassed in this question. This question is also a way of getting the students’ attention and to access prior knowledge.

**Objectives…** What the students are expected to learn in the course of the lesson.

**Disciplines/Standards…** The subjects, Sunshine Standards, and Kaleidoscope objectives covered in the lesson.

**Materials…** A list of everything the teacher must have in order to teach the lesson.

**Sponge Activity…** This is the anticipatory set for the lesson: The time to show the *My Blood, Your Blood* video. For lower elementary purposes, the video has been segmented for viewing in the lesson plans. This was done in order to focus on a smaller section of information and to keep the students’ attention. Also included in the anticipatory set is a brainstorming/webbing activity. This is an inviting and thought provoking exercise for the students to draw from their prior knowledge and prepare for the day’s lesson.

**Teaching Procedure…** Step by step instructions on presenting the material and reinforcing student learning.

Any additional student handouts or examples immediately follow each lesson plan.

**Culminating Activity…** This is the final activity of the lesson. This activity summarizes the information from the lesson and should give students an opportunity to demonstrate their learning. The use of this activity as an evaluative tool is entirely up to the teacher. There should be ample opportunities for grading in this section.

This is also the time to come back to the opening question. How will students answer the question now? They may have a different answer, or at least be able to give a more thorough explanation or supporting details to their answers.
MBYB – LESSON 1

Opening Question: What is something you cannot live without?

Objectives:
1. Students will engage in creative thinking through a brainstorming strategy.
2. Students will identify the theme of the unit.
3. Students will illustrate types of gifts that cannot be bought.

Disciplines / Standards:
☞ Math: Number Sense, Concepts, and Operations ~ Standard 3-A, B, C. Algebraic Thinking ~ Standard 2-B.
☞ Social Studies: Economics ~ Standard 1-A, B, C.

Vocabulary: invitation, gift, arteries, veins

Materials:
? resource books on blood (see Bibliography)
? party decorations – red (for arteries) and blue (for veins) streamers.
? The Giving Tree, by Shel Silverstein
? Copies of the “I Can Give ________” worksheet or empty boxes that each student can decorate.
Sponge Activities: “You’re invited!”

1. Decorate for a party in your room, using red (for oxygen-rich blood) and blue (for oxygen-poor blood) streamers and decorated gift boxes and/or handouts. Have students be creative!

2. Daily Math:
   K – 1 ~ If you invite 4 boys and 3 girls to a party, how many boys and girls do you have in all?
   Grade 2 ~ If you invite 12 boys and 8 girls to a party, how many more boys are invited than girls? How many are invited in all?

3. Video: My Blood, Your Blood
   From the beginning — STOP: After Tyler’s body returns to normal and the older boy says, “Cool!”

4. Webbing:
   ✍️ Teacher prompts – “Have you ever been sick or hurt and received a gift that made you feel better?” “What did you receive?” “How did it make you feel better?” “Did you thank the person who gave you the gift?”
   ✍️ Draw a web on the board to record student responses.

Teaching Procedure:
1. Read The Giving Tree by Shel Silverstein.
2. Discuss: There are different kinds of gifts that we can give. There are lots of gifts that don’t even cost anything!

Culminating Activity / Assessment:
1. Journal Write:
   ✍️ Teacher prompt – “What gift can you give that doesn’t cost any money?”
   ✍️ Students illustrate and write the name of their gift on the prepared worksheet: “I can give…”
   ✍️ OR students write/illustrate on a box decorated to look like a present.

Suggested Center Activities:
1. Writing Center ~ Create an invitation to a party and/or a thank you note for a gift.
2. Building Center ~ Trace your body; draw and paint blood vessels.
I can give __________.
MBYB – LESSON 2

Opening Question: How does your blood move through your body?

Objectives:

1. Students will employ creative thinking through a webbing activity.
2. Students will identify various types of pumps.
3. Students will identify the heart as their body’s special pump.
4. Students will recognize the circulatory system as the body’s transportation system.
5. Students will create illustrations comparing quantities of blood in a baby, child, and adult.

Disciplines / Standards:

Language Arts: Reading ~ Standard 1-C. Standard 2-A, C.
Writing ~ Standard 1-A, C. Standard 2-D.
Listening, Viewing, and Speaking ~ Standard 1-A, C, D. Standard 2-A. Standard 3-B.

Measurement ~ Standard 1-A. Standard 2-B. Standard 4-B.
Algebraic Thinking ~ Standard 2-A, B.
Data Analysis ~ Standard 1-A, B, C.

Science: Processes of Life ~ Standard 1-C.
Force and Motion ~ Standard 1-B.
The Nature of Science ~ Standard 1-A, C, D.

Visual Art – Skills and Techniques ~ Standard 1-B.

Vocabulary: pump, scientific method (problem, materials, hypothesis, procedure, conclusion), circulation, transportation
Materials:
- My Blood, Your Blood Learning Guide and video
- index cards, 4” x 6” or 5” x 7” (3 per student)
- paper towel rolls (1 per pair of students)
- pencils and crayons
- tap water
- red food coloring
- 16 jars of equal size (preferably pint-sized)
- spoon

Sponge Activities:
1. Video: My Blood, Your Blood (Review/discuss segment of the heart /vessels demonstration.)
   ✏️ BEGIN: Rory says, “Tyler, will you help me demonstrate?”
   ✏️ STOP: Male student says, “What exactly is blood?”

2. Webbing:
   ✏️ Teacher prompts – “What kinds of pumps can you think of? What things use a pump?”
   ✏️ Draw a web on the board. (May want to sketch a heart as the center of the web.)
   ✏️ Exhibit a pump: e.g., a bicycle tire pump.

Teaching Procedure:
1. Introduce the heart as a very special kind of pump. Discuss: The heart pushes blood through your body as it pumps. (You may demonstrate this concept with the bicycle pump or other pump exhibit.)

2. Instruct students: Feel your heart pump by placing your hands over your chest. Can you feel your heart? Stand up and jog in place for 20 seconds. Stop. Now place your hands over your chest again. Can you feel your heart pump now?

3. Discuss: What happened to your heart after running in place? Compare the difference between the heart’s activity when sitting and after running.


5. Discuss: What is the shape and size of your heart? Observe student responses.

6. Do the “Size and Shape of Your Heart” activity from American Heart Association handout.
7. With fists in same position from above activity, instruct students to squeeze one fist, saying “Lub,” and then the other fist, saying “Dub” to simulate the “Lub-Dub” of the heart’s pumping action.

(Additional information: Your heart squeezes or pumps about 8 times every 5 seconds; about 96 times each minute. 1 “Lub-Dub” = 1 complete pump. The 2-pump heart functions as one unit to push the blood through the body.)

8. **Song:** At this age, children love to make up their own lyrics to a familiar tune. Using the well-known song “BINGO,” encourage the students to create their own words, spelling out the word “HEART” as they would “BINGO.”

**Culminating Activity / Assessment:**

**COMPARING THE AMOUNT OF BLOOD IN A BABY, A CHILD, AN ADULT**

(Note: Use the scientific method as a guide for this activity. Teacher may want to display a poster or copy the method onto the board.)

1. Inform students: As a baby grows, the amount of blood in his/her body increases. Let’s see how we can show the difference between the amount of blood in a baby, a child, and an adult.

2. Instruct students to fold each index card in half so they stand up. Draw and label a baby, child, and an adult (one per index card). They are to write their names on the back of each card, and leave space for jars to be drawn in later.

3. **Scientific Method:**
   a. **Problem** ~ How much blood is in a baby? A child? An adult?
   b. **Hypothesis / “Best Guess”** ~ Have students predict how many jars of blood for the baby? The child? The adult? Record their predictions.
   c. **Materials** ~ 16 jars, tap water, red food coloring, spoon
      (Each jar is filled with water and about 3 drops of food coloring. Stir to mix.)
   d. **Procedure** ~ Arrange jars into groups: 1 jar, 5 jars, 10 jars. Next, instruct some students to place their index cards next to appropriate group as a label while predicting the amount of blood for each.
   e. **Conclusion** ~ Assign correct labels to groups of jars:
      ✎ 1 jar = baby
      ✎ 5 jars = child
      ✎ 10 jars = adult.

   f. Instruct students to draw/color the appropriate number of jars on each index card.

(Note: Place this activity at the Science Center to allow children to sort and manipulate the quantities to review this concept.)
**Daily Math:**

- **Kindergarten:** If there is about 1 pint of blood in one baby, how many pints of blood would there be all together in 3 babies?

- **First Grade:** There are 3 first graders lined up for recess. If one child has about 5 pints of blood, how many pints of blood do all 3 children have together?

- **Second Grade:** Danny Doozer has 1 brother, 1 sister, and his mother and father in his family. If each child has 5 pints of blood and each adult has 10 pints of blood, how much blood is there in his family all together?

**Suggested Center Activities:**

1. Art Center ~ “Heart Work”

2. Science / Math Center ~ “Working Heart”
To appreciate the size and shape of your heart — put your hands together.

For such a strong muscle with a big job to do, your heart really isn't all that big. In fact, if you make a fist with one hand and wrap your other hand around it, you'll get a pretty good idea of your heart's size and shape. Your heart is a muscle shaped like a hollow pump that lies in the middle of your chest, pointing slightly to the left at the bottom.

If we were to travel into your body, we would see that your heart is actually a pair of pumps working together — side-by-side — divided down the middle by a wall. Each side is also divided into two chambers — the upper chamber, called the atrium, and the lower chamber, called the ventricle. If we went through the valves that separate the upper & lower chambers, we would see that they're little doors that open only one way, to keep the blood flowing in only one direction. Don't bother to knock — because they open and close automatically!

To travel the distance of an adult's blood vessels, we'd have to go over 60,000 miles.

Without a doubt, your heart stays on the job through thick and thin! Your blood vessels are a seemingly endless stretch of hollow, soft, elastic tubes called arteries and veins and capillaries. The arteries range in size from as big around as your thumb, to too small to see. The capillaries, the thinnest of all blood vessels, are thinner than a single strand of your hair. When you're an adult, these tubular vessels would stretch end-to-end more than two times around the world.
The Scientific Method

Problem

Hypothesis

Materials

Procedure

Conclusion
The Scientific Method

Problem

Hypothesis

Materials

Procedure

Conclusion
MBYB – LESSON 3

Opening Question: What is blood?

Objectives:
1. Students will engage in creative thinking through a webbing strategy.
2. Students will identify the four basic parts of blood:
   a. red blood cells
   b. white blood cells
   c. platelets
   d. plasma
3. Students will relate the “job” or purpose of each blood part.
4. Students will create a book illustrating the four basic parts of blood.

Disciplines / Standards:


Math: Measurement ~ Standard 3-A, B.


Vocabulary: red blood cells, white blood cells, platelets, plasma, oxygen, germs, defend, prevent
Materials:
- Poster of blood cells from Learning Guide (to be displayed).
- For the See and Feel My Blood book: one manila folder per student for cover and back of fact book, copied worksheet templates for fact book, crayons, markers and/or colored pencils, cotton balls, red tissue paper, aluminum foil, glue, yellow paint, pencils.

Sponge Activities:
1. **Video:** My Blood, Your Blood
   - **BEGIN:** Male student says, “What exactly is blood?”
   - **STOP:** Rory says, “Thanks, Mike.”

2. **Webbing:**
   - Teacher prompts: Can anyone remember the four parts of the blood?
   - What is the job of each part of blood?
   - Record all information on the board in a web design.
   - Discuss the parts of the blood and each part’s role in the body.

   *(Note: See following pages for reproducible webs. One web includes blank lines for facts about the blood parts.)*

Teaching Procedure:
1. Prepare students to work independently by using the overhead projector or board to review shapes and structures of each blood part. Draw the shape of each blood part, allowing students to identify which blood part is being drawn, as well as its job, based on the information from the video and the webbing activity.

2. Distribute materials to students’ desks/tables.

3. **Teacher prompt:** Looking at the materials we will be using, what would you use to illustrate each blood part in a special book you will be creating?

Culminating Activity / Assessment: CREATE A BLOOD FACT BOOK
1. Cover title: See and Feel My Blood

2. See following pages for book setup and reproducible page worksheets.
   *Suggestion:* Kindergartners may color/decorate distributed worksheet illustrations of each blood part and read facts from the worksheet. Upper level students may use colored pencils or markers to illustrate the blood parts and write their own facts based on teacher guidance and classroom discussion.
**Daily Math:**

- **Kindergarten:** Pretend that a drop of blood has 6 red blood cells and 2 white blood cells. How many cells are there in all?

- **First Grade:** Pretend that a drop of blood has 7 red blood cells and 3 platelets. How many more red blood cells than platelets are in this drop of blood?

- **Second Grade:** Pretend that a drop of blood has 10 white blood cells, 40 red blood cells, and 30 platelets. How many blood parts are there in all?

**Suggested Center Activities:**

1. **Listening Library:** Listen to musical cassette tapes, drawing and/or writing responses as it relates to the different parts of blood.
The Parts of Blood
The Parts of Blood
Red Blood Cell

Fact:
This part of the blood carries oxygen to every part in my body.
Red Blood Cells work harder when I’m running.
White Blood Cell

Fact:
This part of my blood fights off germs and disease. White Blood Cells kill the germs and then eat them!
Fact:
Platelets help me when I cut myself.
They help make a scab. This stops my bleeding.
Plasma

Fact:

This is the Liquid part of my blood. It is made up of water, sugar, salt, and proteins.
Red Blood Cell

Facts:

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________
My Blood, Your Blood

White Blood Cell

Facts:

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________
My Blood, Your Blood

Plasma

Facts:

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________
Platelets

Facts:

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________
MBYB – LESSON 4

Opening Question: Where is your blood made?

Objectives:
1. Students will engage in creative thinking through a sequencing strategy.
2. Students will recall the sequence of a red blood cell’s life.
3. Students will role-play or illustrate the life and death of a red blood cell.

Disciplines / Standards:
☞ Language Arts: Reading ~ Standard 1-A, C. Standard 2-A.
   Writing ~ Standard 1-A. Standard 2-B.
   Listening, Viewing, and Speaking ~ Standard 1-A, C, D.
   Literature ~ Standard 1-B. Standard 2-A.

☞ Math: Number Sense, Concepts, and Operations ~ Standard 1-A.
    Standard 3-A, B, C.

   Processes of Life ~ Standard 1-C.
   The Nature of Science ~ Standard 1-A, C, E. Standard 3-A.

   Visual Arts – Creation and Communication ~ Standard 1-A.

Vocabulary: bone marrow, twins, blood vessel, spleen, lungs, heart, and appropriate names of other body parts

Materials:
? Poster: My Blood, Your Blood – Highlights from the Video
? body part label signs for play; copied, cut, and posted around the room
? 2 chairs
? hula hoop or masking tape (taped on the floor in a circle)
? (For Second Grade: movie strip activity sheet)
Sponge Activity:

1. **Video:** *My Blood, Your Blood*
   
   **BEGIN:** “Where do you come from?”
   
   **STOP:** “But what I want to know is, how do you do it?”

2. **Sequence Web:**

   *(Note: Define “sequencing” for students.)*

   - Teacher prompt: How many examples of sequencing can you think of? For example, the days of the week. (Other examples: months of the year, numbers, daily schedule, making a sandwich, getting dressed for school.)
   
   - As students are responding, draw a web on the board to record the information.

Teaching Procedure: **Sequence Web:** “Birth and Death of a Red Blood Cell”

1. Whole class will review the sequence of the life of a red blood cell from information presented in the video.

2. Teacher will place picture cards one through five on the board; or give five students one card each and instruct them to put themselves in the correct sequence (left to right) so the class can see.

3. Review what is happening in each picture, writing answers on the board. Include the fact that the stem cell is the parent cell which produces sets of twins, and they in turn continue to reproduce.

Culminating Activity / Assessment: **THE LIFE OF THE RED BLOOD CELL**

Kindergarten and 1st Grade (may be adapted for 2nd grade):

1. Label different areas of the classroom with names of appropriate body parts. Show students the ear, nose, stomach, toe, etc. Set off one spot for the spleen by using a hula hoop or masking tape. Place 2 chairs together in the middle of the room to represent the bone marrow found in the middle of a bone. Let students know they are the “baby” blood cells. Choose two students to role-play first while the class watches.

2. Teacher instructs the two students to sit in the chairs, holding hands or linking elbows, and prompts the role-play with the following narrative:

   “Pretend you are in a human body. You are a stem cell in the bone marrow, the soft, middle part of a bone. You break apart into twins (students detach from each other). Now you are ready to enter a blood vessel for 120 days. All right, <name of student>, you move as fast as you can to…(name a part of the body for each child. Each runs to that part and touches the label). Read the word on the label to your
blood relatives and head to the spleen. Here you will end your bloody life! You die….(encourage dramatic presentation!!).”

3. Choose 2 more students to perform this scenario and repeat until the whole class has had a turn.

2nd Grade:
Students will create their own movie strip or comic strip: “The Adventure of the Red Blood Cell.” (Use the worksheets provided, or have students create their own. You may want to have students write their own creative title.) Students will follow the sequence as taught above, but should also add extra adventures of where the red blood cell may travel (nose, ear, heart, toe, etc.). Be sure each student depicts the death of the red blood cell in the spleen at the end.

Daily Math:

Katergarten and 1st Grade: One set of twin blood cells is born from a stem cell and another set of twins joins them. How many blood cells are there all together?

2nd Grade: If there are 3 sets of twins made from a parent stem cell, how many blood cells will there be all together?

Suggested Center Activities:


2. Science / Math Center: “What is Inside of Bones?”
Lifecycle of a Red Blood Cell

This is a stem cell. This is where Rory and his brothers and sisters are born.
Rory Enters
Your Blood Stream

"I am going into your blood stream..."
Blood cells circulate in your body for 120 days!

= Oxygen-Poor
= Oxygen-Rich
Then, Rory dies and leaves your body.

"Bye! I will miss you."
Heart

Big Toe
Lungs

Hand
Elbow

Knee
Ankle

Stomach
Leg

Thumb
Brain

Neck
Foot

Eye
Nose

Hip
Waist

Spleen
Belly Button
Movie Strip

Title:___________________________________
MBYB – LESSON 5

Opening Question:  What is in the air that our blood needs?

Objectives:
1. Students will utilize creative thinking through responding to a drumbeat.
2. Students will identify the need for oxygen.
3. Students will physically respond to and observe varying heart rates.

Disciplines / Standards:

Language Arts:  
- Reading ~ Standard 1-B, C.
- Writing ~ Standard 2-A, B, D.
- Language ~ Standard 1-A. Standard 2-A.

Math:  
- Number Sense, Concepts, and Operations ~ Standard 2-A, B, C.
- Measurement ~ Standard 2-A.

Science:  
- Processes of Life ~ Standard 1-C.
- Force and Motion ~ Standard 1-A.
- The Nature of Science ~ Standard 1-A, B, C.

The Arts:  
- Dance – Creation and Communication ~ Standard 1-A.

Vocabulary:  
oxygen, carbon dioxide, blood, energy, heart, circulate, circulation

Materials:  
- My Blood, Your Blood Learning Guide and video
- hand drum (or any percussive instrument to represent a heartbeat)
Sponge Activities:

1. **Video:** *My Blood, Your Blood*
   - BEGIN: “But what I want to know is, how do you do it?”
   - STOP: Rory says, “The harder you exercise, the faster I go!”

2. **Brainstorm:**
   - “What happens to your body when you run as fast as you can?”
   - Possible responses: sweat, red face, short and quick breaths, sore legs, etc.
   - “Do you know why this happens to your body?”
   - Inform: The body needs oxygen in order to live. When movement quickens and the heart pumps faster, more oxygen is needed in the blood to supply the energy it takes for the body to maintain activity.

3. Instruct class to see if they can feel their resting heartbeat: “Place your hands on your chest over your heart. Can you feel your heartbeat? How does it feel?”

4. Instruct students to run in place for 20 – 30 seconds. At your signal to stop, students will place hands on chest over heart again and feel the difference.

5. Discuss: “Can you feel your heartbeat? How does it feel now? Is it faster or slower?”

**Teaching Procedure:** MOVEMENT GAME

1. Instruct students to make a group circle.

2. Let them know they are the blood in the teacher’s body, and when the teacher needs more oxygen they will have to move faster. (Less oxygen, move slower.)

3. Choose a student to make the sound of the heartbeat (Lub-Dub) with a hand drum (or other percussive instrument).

4. Guide students to practice marching in their circle to the “Lub-Dub” beat, varying the tempo (speed) from slow to fast so the circle rotates (circulates) in time to the beat.

5. Ask: “Are you ready to be my blood, and to move (circulate) according to what I am doing?”

6. Teacher, as the actor, creates the following scene; students, as the blood, respond to the “Lub-Dub” beat of the drum:
   - Pretend to be asleep. (Very slow beat on the drum and students move accordingly.)
   - Awaken and pretend to be reading. (Beat gradually speeds up.)
? Stand up and begin walking. (Continue increasing the tempo of the beat while students respond in time.)
? Spontaneously start dancing and/or running. (Drum reacts to movements of the teacher as students continue their circulation.)
? End by returning to a sleeping position. (Drum should be very slow again.)

7. Next, teacher may repeat the “Movement Game” by choosing a student to be the actor and another student to be the “heartbeat.”

8. Worksheet Assessment:
? Distribute prepared worksheets.
? Instruct students to circle the activity that needs more oxygen.
? 1st and 2nd Grades: Write a sentence of explanation at the bottom of the worksheet.

**Daily Math:**
- **Kindergarten – 1st:** Bobby counted 10 heartbeats. Jill counted 6 heartbeats. How many heartbeats did they count all together?

- **2nd Grade:** Your heart rate is 40 after counting your heartbeat for 30 seconds. How many times per minute is your heart beating?
Breathing

- Sleeping
- Walking
- Eating
- Running
- Studying
- Sleeping
Breathing

Ha Ha! Ha
Laughing

or

Dancing

or

Swimming

or

Resting

or
MBYB – LESSON 6

Opening Question: When you cut yourself, what stops your cut from bleeding?

Objectives:
1. Students will engage in creative thinking through a brainstorming strategy.
2. Students will be able to recall how a scab is formed.
3. Students will recognize the importance of platelets and fibrin in the clotting process.

Disciplines / Standards:

 Language Arts:  
Reading ~ Standard 1-B, C. Standard 2-C.  
Writing ~ Standard 2-A, D.  

 Math:  
Number Sense, Concepts, and Operations ~ Standard 3-A, B, C.

 Science:  
The Nature of Matter ~ Standard 1-A. Standard 2-A.  
Processes of Life ~ Standard 1-C.

 The Arts:  
Visual Arts – Skills and Techniques ~ Standard 1-A, B.  
Visual Arts – Creation and Communication ~ Standard 1-A, B, C.

Vocabulary: caps, plugs, cuts, scab, platelets, fibrin

Materials:
? poster of platelets and scabbing (included in the Learning Guide)  
? chart paper  
? manila paper for each student  
? markers  
? red and white construction paper for 5-inch diameter circles (10 red and10 white per student)  
? clear overhead transparencies for 10 5-inch diameter circles  
? yarn – 10 pieces in white per student  
? glue  
? jar (at least pint-size)  
? 3 squares of cheesecloth big enough to cover the mouth of the jar  
? rubber band  
? tap water  
? bowl (medium-size)
Sponge Activities:

1. **Video:** *My Blood, Your Blood*
   
   **BEGIN:** “Oh, I think the Stickler Kids have finally arrived.”
   
   **STOP:** “Blood will begin to flow through the vessel normally again.”

2. **Review:** Discuss what happened to the boy in the video who fell off his bike.
   
   **Teacher prompt:** Which parts of the blood formed the plug for the boy’s scrape? (platelets and fibrin)
   
   **Whole Group Activity (optional): Why do I get scabs?**
   
   (Note: An option for this activity may include using the Scientific Method either in oral or written form. Use the worksheets from Lesson 2.)

   **Materials:** a jar, cheesecloth, rubber band, tap water, bowl
   
   a. Fill a jar about half full with tap water.
   
   b. Cut three square pieces of cheesecloth large enough to cover the mouth of the jar. (*You may want students to look closely at the cheesecloth before proceeding; or, pour water over one piece to see water flow through.*)
   
   c. Lay each piece of cloth over the mouth of the jar. Make sure the squares are laid so the threads crisscross. This should form very small openings between them.
   
   d. Next, place a rubber band over the cloth and around the neck of the jar to hold the cloth securely against the jar.
   
   e. Inform the students that the water represents blood, and the cloth is the scab. Ask: “Do you think this scab will work?”
   
   f. Set a bowl on the table. Hold the jar upright over the bowl, then quickly turn the jar upside down.
   
   g. At first, some of the water will pour out of the jar; but most of it will stay inside.
   
   h. Discuss: “What happened?” “Why?”
   
   i. Guide students through the conclusion:
   
   “Now we know, from watching what happened to the water in the jar, that water fills the holes between the crisscrossed threads of the cloth and stops the water from flowing out of the jar. In much the same way, when you cut yourself your blood is trapped by tiny, sticky, threadlike materials that cover the cut. This stops the bleeding and makes a dry, hard scab on your skin.”

3. **Brainstorm:**
   
   “What items can you think of that are plugs or caps, or that need a plug or a cap?”
   
   **Examples:** hats, noseplugs, earplugs, shower cap, thermos bottle, gas tanks, bottles, sinks, bathtubs, etc.
   
   **Discuss:** “What parts of the blood form our human plug?”
**Teaching Procedure:** (Whole Group)

1. Draw a BIG cut on a piece of chart paper, and label it as a cut.

2. Divide students into four groups:
   a. *Platelets* – each with a clear circle
   b. *Fibrin* – each with a piece of yarn
   c. *White Blood Cells* – each with a white circle
   d. *Red Blood Cells* – each with a red circle

3. Explain that the above are all parts of the blood. They must work together to stop the bleeding and form a scab.

4. Call up two students at a time from each group (platelets and fibrin first) to glue their pieces over the cut. (The cut should be drawn big enough so that everyone will get a chance to “plug it up” and cover the whole cut.)

5. Label each part of the “scab” as you ask students to recall the names of each part of the blood.

**Culminating Activity / Assessment:** (Independent Activity)

*Create a Scab* – Students will create their own scabs at their seats. (See following sample page.)

1. Student will label work: “How a Scab Forms.”

2. Students will trace and cut out scab parts: (or work with teacher-prepared materials)
   ? Red Blood Cells – red circle
   ? White Blood Cells – white circle
   ? Platelets – clear circle
   ? Fibrin – yarn
   *(May want to do Daily Math activities at this time.)*

3. Students will draw a cut on a piece of manila paper.

4. Students will glue blood parts into place on manila paper. (Allow drying time.)

5. Students will label the cut and the blood parts.

**Daily Math:**

*Kindergarten:* Sort and identify a collection of scab parts (from above activity) into their respective piles.

*1st and 2nd Grades:* Make a class graph, asking, “Which parts of our bodies get more scabs?” *Examples:* feet, knees, elbows, hands, chin, etc.
How a Scab Forms

1. A scab forms when you get cut.
2. Platelets attach to the cut and start a scab.
3. Then long pieces of fibrin attach to the cut.
4. Red and white blood cells also attach to the cut.
5. After a short period of time, the skin heals and the scab falls off.
What A Scab Looks Like

- Platelets
- White Blood Cell
- Red Blood Cell
- Fibrin
MBYB – LESSON 7

Opening Question: How do you get better when you feel sick?

Objectives:
1. Students will engage in creative thinking through a sequencing map activity.
2. Students will define the role of the white blood cell.
3. Students will sequence the steps involved in eliminating germs from the body.
4. Students will illustrate the concept of a white blood cell at work.

Disciplines / Standards:
- Language Arts: Reading ~ Standard 1-C. Standard 2-C.
  Writing ~ Standard 2-A, B, D.
- Math: Number Sense, Concepts, and Operations ~ Standard 2-A, B.
  The Process of Life ~ Standard 1-C.
  The Nature of Science ~ Standard 1-A, C. Standard 2-A.
  Visual Arts – Skills and Techniques ~ Standard 1-A, B.
  Visual Arts – Creation and Communication ~ Standard 1-A, C.

Vocabulary: sequence, germs, harmful, white blood cells, job

Materials:
- My Blood, Your Blood Learning Guide and video
- manila paper for each student
- glue
- crayons / markers / colored pencils
- worksheet: “White Blood Cells at Work”
Sponge Activities:

1. **Video:** *My Blood, Your Blood*
   
   **BEGIN:** White blood cell says, “Pardon me, Michael, but isn’t it about time my side of the family makes their appearance?”
   
   **STOP:** Ellie’s Celebration Party is announced.

2. Whole class discussion: Review the job of the white blood cells and the sequence involved in fighting germs. Students should copy notes into their journal from this discussion. (Use as a resource for the “rap” activity on the next page.)

**Teaching Procedure:** SEQUENCING MAP

∃ Proceed with the following on the board or a flip chart, making a simple sketch of each of the four steps as you prompt the students.

1. “What does it mean when you feel hot and have a fever?”
   (Germs are in your body.)

2. “What type of cells find the germs?”
   (white blood cells)

3. “When white blood cells see the germs, what do they do first?”
   (attack the germs)

4. “Then, how do the white blood cells get rid of those nasty germs?”
   (They eat the germs!)

**Culminating Activity / Assessment:**

∃ **Journal Activity ~** Students will use the included worksheet to illustrate a white blood cell at work.

∃ Teacher prompt: “If I were a white blood cell and I found a germ in my house (the body), I would…”

**Kindergarten:** Students illustrate as teacher dictates.

**1st – 2nd Grades:** Students illustrate and write a caption for each illustration.
Compose a rap!

The topic will be about the work of the white blood cell.
Use the journal activity as a springboard for the rap lyrics.

Daily Math:

Kindergarten – 1st Grade: Dan has 6 germs in his body. Sue has 10 germs in her body. Greg has 2 germs in his body. Put the names in order from who has the fewest germs to who has the most germs.

2nd Grade: Jordan has 358 germs in his bloodstream. Sarah has 372 germs in her blood system. Stephen’s bloodstream has 326 germs swimming around. Put the names in order from who has the least to who has the greatest number of germs.

Suggested Center Activity:

Art Center ~ Create the ugliest germ you can imagine!
White Blood Cells at Work

Step #1

Step #2

Step #3

Step #4
White Blood Cells at Work

Step #1

Step #2

Step #3

Step #4
Opening Question:  How is blood a gift?

(Suggestion: Schedule the Manatee Community Blood Center Bloodmobile to come to your school during the first day of this Microcommunity for a staff blood drive and tour for your students. This could be a wonderful introduction for this set of lesson plans.)

Objectives:
1. Students will listen to a teacher explanation of blood donation and apply the information to a writing activity and the Microcommunity.
2. Students will create an invitation to donate blood.
3. Students will identify equipment used for blood donation.
4. Students will engage in creative thinking through a brainstorming strategy.
5. Students will identify and perform the various roles within the blood center organization.
6. Students will follow procedures as they role-play.
7. Students will interact appropriately with each other according to their role.
8. Students will listen and be attentive to each other.

Disciplines / Standards:
- Language Arts:  
  Reading ~ Standard 2-C.
  Writing ~ Standard 1-A, B, C. Standard 2-D.
  Listening, Viewing, and Speaking ~ Standard 1-A, C, D. Standard 2-A. Standard 3-C.
- Mathematics:  
  Number Sense, Concepts, and Operations ~ Standard 3-A, B, C.
  Measurement ~ Standard 1-A.
- Science:  
  Processes of Life ~ Standard 1-A.
  The Nature of Science ~ Standard 1-A, C, E. Standard 3-A.
- Social Studies:  
  Government and the Citizen ~ Standard 2-C
  Production, Distribution, and Consumption (Economics) ~ Standard 2-A.
- Health/Physical Education:  
  Health Literacy ~ Standard 1-A, D, G, H.
  Responsible Health Behavior ~ Standard 1-A. Standard 2-B.
  Literacy ~ Standard 1-D.
- The Arts: Visual Arts:  
  Creation and Communication ~ Standard 1-A.
Skills that will be addressed: time, hygiene, occupation, listening, writing, reading, viewing, role-playing, social skills

Vocabulary: bloodmobile, canteen, donate, donor, donor chair, gift, interview booth, invitation, volunteer

Materials:

- My Blood, Your Blood Learning Guide and video
- Donor sign-in sheet (2 options)
- Sample donor interview
- Blood donor cards (2 options)
- Heart stickers (supplied by teacher) or copies of heart paper for students to color and tape onto their shirts

Provided by teacher:

- Empty boxes of snacks and drinks for canteen
- Band-Aids®
- Cotton balls (to put over “needle prick,” under the band-aid)
- Zip-top bag and yarn (to make a “blood bag”)
- Pillow and blanket (to make the donor comfortable in the donor chair)
- Chair
- White coats (for nurses)
- Gloves (for nurses)
- Tongue depressors (to use as thermometer)
- Baby wipes or tissue (to clean arm prior to the “stick”)
- Clipboard (for interviewer)
- Digital clock or watch (for donor to copy the time onto the sign-in sheet)
- Advertisements for the blood center (a few students may make posters to display)
- Blood pressure cuff
- Stethoscope (may have the interview nurse listen to the donor’s heartbeat)
- Timer or stopwatch
- Masking tape (to tape colored heart to the donor’s shirt)

Sponge Activities:

1. **Video:** My Blood, Your Blood
   BEGIN: Ellie’s Celebration Party!
   STOP: At the end.
2. **Webbing:**

   “Why would someone need to receive blood?”

   ![Who needs to receive blood?](image)

**Journal:**

“Who can give blood?”

Discuss as a class - The teacher gives background information of who can give blood and how the process works. The 3 main criteria to be a blood donor: (1) at least 17 years old; (2) in good general health; (3) and weigh at least 105 pounds. (See the brochures for more details.) Next, instruct students to write in their journals a list of persons they know who could give blood.

*(Note: If you have given blood yourself, please talk about your own experience!)*

**Blood Center Microcommunity Teacher Procedure/Script ~**

**Teacher Introduction to the Microcommunity:**

Discuss:

1. People go to a special place to give blood. It’s a very safe and clean place. There are nurses and phlebotomists who take (draw) your blood. They have gone to school to learn to draw blood.

2. People can give people blood; dogs can give dogs blood; cats can give cats blood; but, only people can give people blood. You cannot give your blood to animals, or receive blood from an animal to save a person’s life.

3. Introducing the Microcommunity: “Would you like to have a pretend blood center here in our classroom? Now, what do you think we would need to run a blood center here?”

   Brainstorm ideas and record them on the board.

   **Brainstorm prompting questions:**

   a. How do we know if someone is healthy enough to give blood?
      (interview questions, thermometer, blood pressure cuff)

   b. What would we need to collect the blood from someone?
      (bags, needles, chair, tubes, Band-Aids®)

   c. What would be a nice reward for giving blood? (Introduce the word “canteen.”)
      (crackers, cookies, juice, sticker, thank you letter)
The next day/lesson:
4. Now that we know what we need to operate our pretend blood center, let’s look at what we have.
   (Teacher can review collected materials. Show students how some items will be pretend. For example, students can’t really stick each other with a needle!)
5. Teacher again explains the process of donation.
6. Teacher-guided role-play: Choose volunteers to demonstrate the blood center Microcommunity with you. Have a section in the room designated and set up for the blood center.

(Note: Use “Blood Center Microcommunity Procedure Sheet” on the next page as your guide.)
Blood Center Microcommunity Procedure:
Stress healthy practices/proper hygiene throughout the process!
3-4 people involved in the role-playing (based on students and space)

1. The blood donor walks in and signs his or her name on a sign-in sheet. (Use the sign-in sheet either with or without the designated time, depending on your class’s experience with this concept. A digital clock may be used.)

2. A nurse at the front desk interviews the donor using the interview sheet. (The reading section may be skipped in Kindergarten if an adult is not available to assist.)

3. Next, the nurse performs the “mini-physical.” (The mini-physical involves taking the donor’s temperature with a tongue depressor, listening to the donor’s heartbeat, and determining the donor’s blood pressure. The teacher may opt to add other healthy check-up practices at his or her discretion.)

4. A second nurse escorts the donor to the donation chair and fills out the donor card. (The nurse must listen very carefully to the donor in order to fill out the donor card. The donor will have to spell his/her name for the nurse.)

5. The second nurse then performs the mock donation process.
   a. Make sure that the donor is comfortable. (Would the donor like a pillow or blanket?)
   b. Roll up the donor’s sleeve, and then clean his or her arm with the baby wipe or tissue.
   c. Pretend to take blood. This should take about 3 minutes (use a timer or stop watch).
   d. Use the zip-top bag connected to a piece of yarn for the blood collection simulation.
   e. Place a cotton ball and Band-Aid® over the donor’s vein.
   f. The nurse walks the donor to the canteen area for (pretend) snacks.
   g. Give the donor a heart sticker or heart paper to color, cut out, and wear.
Hi! Welcome to the community blood center.

This is where people come to give blood. It makes them feel good to save lives.

This is the laboratory. Blood is tested here to make sure it's safe for patients to receive.

Then it's broken down into different parts so that each donation can help several patients.

Red blood cells look like donuts without the holes.

Platelets are like sponges. They link together to help blood clot.

Plasma is yellow and watery. People who have been badly hurt in accidents or fires often receive plasma.
Careful drivers deliver the blood to hospitals.

**Blood** must be ready to use when people need it.

Almost anyone can **give blood** if they're healthy and at least 17 years old.

And these people say, "**Thanks!**"
Donor Sign-in Sheet

__________________________  Blood Center

(Teacher’s name)

Please print your name below.

__________________________________

__________________________________

__________________________________

__________________________________

__________________________________

__________________________________

__________________________________

__________________________________

__________________________________

__________________________________

__________________________________

__________________________________

__________________________________

__________________________________

__________________________________
<table>
<thead>
<tr>
<th>Please print your name.</th>
<th>Write the time below.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Blood Donor Card

Name: ________________________________

Address: ________________________________

____________________________________

Age: ___________

Boy or Girl

Birthday: ________________________________

Phone Number: ________________________________

Blood Donor Card

Name: ________________________________

Address: ________________________________

____________________________________

Age: ___________

Boy or Girl

Birthday: ________________________________

Phone Number: ________________________________
Sample

Donor Interview

*Circle either “Yes” or “No” for each question.*

1. Have you ever donated blood? Yes or No
2. Are you feeling well and healthy today? Yes or No
3. Have you traveled outside of the United States? Yes or No
   
   If yes, where have you been? ________________________________

4. Are your ears pierced? Yes or No
5. Have you ever been in jail? Yes or No
6. Are you seventeen or older? Yes or No
7. Have you had a cold or the flu in the last week? Yes or No
8. Have your mom or dad donated blood? Yes or No
9. Have you ever been given blood? Yes or No
10. Do you like helping people? Yes or No
I'M A FUTURE BLOOD DONOR!

I'M A FUTURE BLOOD DONOR!

I'M A FUTURE BLOOD DONOR!

I'M A FUTURE BLOOD DONOR!

I'M A FUTURE BLOOD DONOR!

I'M A FUTURE BLOOD DONOR!
My Blood, Your Blood Unit Test
1st Grade

Circle the best answer.

1. White blood cells fight ____________________.
   guts germs goes

2. Blood is a ________________ of life.
   gift grape gum

3. Did you get your ________________ to the party?
   insects invitation ice cream

4. Platelets help you stop bleeding by making a ________________.
   scab shorts slow

5. The heart is a ________________ in your body.
   please plum pump

6. Someone who gives blood is called a volunteer blood ________________.
   donut donor dog

7. Who has the most blood in their body? baby child adult

8. What is the name of the liquid part of your blood? pump plasma pudding

9. During which activity does your blood move the fastest? sleeping walking running

MATH:
10. There were 4 high school students, 3 grandmothers, and 6 fathers who donated blood. How many people donated blood all together? Show your work below.
My Blood, Your Blood Unit Test
2nd Grade

Fill in the blanks using the word bank.

| blood vessel | platelet | 20 |
| spleen       | germs    | donor |
| oxygen       | pump     | volunteer |
| interview    | plasma   | circulatory |
| gifts        | 17       | faster |
| scab         | white blood cells | slower |

1. The white blood cells kill and eat bad ___________________.

2. A blood __________________ is someone who gives blood.

3. Our blood moves __________________ when we run or swim.

4. Our blood moves __________________ when we sleep or study.

5. Our heart can __________________ 8 times in 5 seconds and 96 times in 60 seconds.

6. Before donors can give blood, a nurse will talk to them during an _________________.

7. Platelets help you stop bleeding by making a _________________.

8. A blood cell is born in the bone marrow, then moves into a _________________ for circulation.

9. A red blood cell dies in the __________________ after 120 days.

10. How old do you have to be to donate blood? _________________ years old.

11. A __________________ is someone who is not paid for his/her work.
12. The liquid part of blood is called ________________.

13. Birthday presents and blood donations are both kinds of ________________.

14. Your heart, blood and blood vessels are all a part of your __________________________ system.

MATH:
15. There are about 10 pints of blood in an adult’s body. If he or she gives 1 pint away, how many pints are left? (Show your work below.)
Teacher Evaluation of My Blood, Your Blood Interdisciplinary Thematic Unit
Lower Elementary Version

Name: ____________________________ Date: ____________________________
School: ____________________________

The thematic unit plans were written with the help of a grant from America’s Blood Centers Foundation. This national organization is interested in sharing the unit plans with blood centers across the country. Please take a few minutes to evaluate our work and mail to: Manatee Community Blood Center, Inc., 216 Manatee Ave. East, Bradenton, FL 34208

Please circle yes or no for each question.
1. Was the lesson plan layout user-friendly? Yes  No
2. Were the explanations of procedures clear and succinct? Yes  No
3. Was the information included in the appendix sufficient and helpful? Yes  No
4. Were the visual aids (video, poster, Learning Guide) helpful and appropriate? Yes  No
5. Was there enough material for you to adapt the unit for your students’ particular needs? Yes  No
6. Were the required materials for this unit easily accessible to you? Yes  No
7. Were the student assessments appropriate and adequate? Yes  No
8. Will you use this curriculum again? Yes  No

9. Did you use the Learning Center ideas? Yes  No
   If yes, how did you use them and how did the students respond? ____________________________

10. Were there any pieces that seemed to be missing in the curriculum? Please explain.
    __________________________________________________________
    __________________________________________________________

11. Is there anything else that would be helpful to include in the appendix? Please explain.
    __________________________________________________________
    __________________________________________________________

12. Approximately how many hours did you spend on the My Blood, Your Blood curriculum? _______
13. Please write a few sentences on your students’ response to the curriculum. ____________________________

Please use the back of this paper for additional comments/suggestions.
Appendix
MISSION STATEMENT

Manatee Community Blood Center, Inc.

The mission of Manatee Community Blood Center is to maintain the highest standards of delivery of an adequate blood supply to meet the needs of our community and others.
LEARNING CENTER PROCEDURES / EXPLANATIONS

ART ~ Heart Work / Art Work:

(Introduced in Lesson 2 and Lesson 7)

Materials:
- markers / crayons / colored pencils
- glue / glue sticks
- cotton balls
- glitter (red and blue) or jello powder (red and blue) or finger paint (red and blue)
- construction paper
- copies of worksheet: Outline of Human Heart (May be enlarged to ease student use.)

1. Students will decorate a large human heart.
   - Students will use two colors, red and blue, to represent the two pumps of the heart and the oxygen-rich/oxygen-poor blood traveling through the heart.

2. Students will create the ugliest germ they can imagine.
   - Students will draw an ugly germ on construction paper.
   - Glue white cotton balls around the germ to represent the white blood cells.

BODY BUILDING CENTER ~ The Path of Blood

(Introduced in Lesson 2 and Lesson 4)

Materials:
- chart or bulletin board paper
- scissors
- glue
- markers / paints / crayons / colored pencils
- copies of heart picture drawn to scale
- copies of worksheet: The Path of Blood
- copies of worksheet: Outline of Human Heart

Teacher:
- Place vocabulary words on a sign at the center: heart, vessels.
- Arrange heart pictures (1 for each student) next to appropriate sign.
- Display picture of the human body vessel path next to appropriate sign.
Students:
- Trace partner’s body on chart paper.
- Cut out own body shape.
- Cut and glue the heart picture onto each body shape.
- Use the given example of the vessel pathways to draw vessels on individual body shapes.

LISTENING LIBRARY ~
(Introduced in Lesson 2)

Materials:
- audio-cassette tape recorder
- books on cassette tapes
- copies of the taped books
- music cassette tapes
- blank cassette tapes
- manila and graph paper

Teacher:
- Set out as many of the suggested “blood” books from the Bibliography as possible.
- You may want to read one or two of the books, putting each on tape for listening purposes.
- Option: record on tape while reading aloud to students. They can use the tape as a review.

Students:
- Listen to and read along with books on tape.
- Record themselves reading a selected book. (This could be done in pairs.)
- Listen to music tapes, drawing and/or writing responses to songs.

Additional Activity:
- Teacher: Record the information from “Animal Heartbeats per Minute” (in the Appendix) on a cassette tape.
- Students are to compare the different beats – small animals to large animals; record as a pictograph or simple drawing (grade-level appropriate).
SCIENCE / MATH ~

1. “What’s Inside of Bones?”

(Introduced in Lesson 4)

Materials:
- leg bone of a cow (available through a butcher)
- baking dish for observation
- copy of worksheet: The Inside of a Bone
- magnifying lens
- sharpened pencil
- manila paper

Teacher:
- Ask a butcher to saw the upper leg bone of a cow in half lengthwise and wrap it for easy transport to school.
- Explain to the students that bones in your legs, and in the legs of a cow, are made of both compact bone and spongy bone.
- Show students the labeled bone picture and discuss the difference between the hard dense material and the soft tissue that is found in the central cavity of the bone.
- Review: Soft tissue is where blood is made!

Students:
- Explore the cow bone in the science center using magnifying lens, and with a sharpened pencil (used for pointing and feeling texture) identify the hard and soft areas of the bone.
- Optional: Instruct students to draw what they see on manila paper.

2. “Working Heart”

(Introduced in Lesson 2)

Materials:
- tennis ball
- watch with a second hand or a stop watch

Teacher:
- Explain: The heart is a pump that works very hard. The heart squeezes, or pumps, about eight times every five seconds.
- Ask: Do you think you can pump like your heart? Let’s see!
Students:
- Hold the tennis ball in one hand.
- Another student (or teacher) will time the student as she/he tries to squeeze the tennis ball eight times in 5 seconds.
- Stop at 5 seconds.

Teacher:
- Ask: Did you squeeze the ball eight times?
- Close: Now you have an idea of how hard your heart works. It can squeeze, or pump, 96 times in each minute!

Additional Activity:
- Display the “Animal Heartbeats per Minute” chart. Have students try to match the animal heart rates with squeezing the tennis ball.

WRITING ~

(Introduced in Lesson 1)

Materials:
- old greeting cards for ideas and examples
- glue / glue sticks
- heart shapes (precut template to trace)
- balloon shapes (precut template to trace)
- markers / crayons / colored pencils
- 3” x 5” ruled card for writing
- construction paper
- various materials for decorating cards

1. Create Invitations: Blood Unit Party
- Students will design and decorate cards to create excitement about the unit and to inform parents about what they are learning. (You may want to invite parents to an “open house” during this unit.)
- Possible information to include:
  - Where: Classroom
  - When: (Set an appropriate date towards the end of the unit)
  - Why: Celebrate our blood – our lifeline!
  - Bring: Yourself! or You!

2. Create Thank You Cards
- To be given to real donors at Manatee Community Blood Center (for the gift of blood).
  (Note: Please contact the Marketing Director at 746-7195.)
- For a gift the student has received.
The Path of Blood

- Capillary
- Artery
- Vein

I travel all this way just for you!
Outline of the Heart
Outline of the Heart

From Body

To Body

Left Atrium

Right Atrium

Left Ventricle

Right Ventricle

Veins

Oxygen-Poor

Oxygen-Rich
The Inside of a Bone

- This is the cartilage.
- This is the spongy part of a bone, it also has the red bone marrow.
- This is the compact bone.
- This is yellow bone marrow.
How blood gets from the donor to the person who needs it!

1. First, the donor gives the blood.

2. Then, the blood is sent off to be tested.

3. Next, the blood is separated into different components until needed.
   - Red Blood Cells
   - Platelets
   - Plasma

4. The blood is then delivered to a hospital’s blood bank.

5. Then, the blood is used for those who need it.
# It Takes All Types To Save Lives

<table>
<thead>
<tr>
<th>ABO Group &amp; RH Type</th>
<th>How Many People Have It</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>O+</td>
<td>1 in 3</td>
<td>This is the most common blood type. 37.2% of hospital patients in Florida need O positive blood. Therefore O positive donors are needed every day.</td>
</tr>
<tr>
<td>O-</td>
<td>1 in 15</td>
<td>This is a fairly rare blood type, occurring in only 7% of the population. O negative is known as the <em>Universal Donor</em>; it is the only blood type that may be safely transfused into persons of any other type. O negative is especially needed for emergencies when there is little time to type and cross-match blood.</td>
</tr>
<tr>
<td>A+</td>
<td>1 in 3</td>
<td>Because this is a fairly common blood type, A positive is in great demand. 34% of the population has A positive blood.</td>
</tr>
<tr>
<td>A-</td>
<td>1 in 16</td>
<td>This is a very rare blood type. Only 6% have this blood type, so A negative donors are always needed.</td>
</tr>
<tr>
<td>B+</td>
<td>1 in 12</td>
<td>This is a fairly rare blood type. Only 8% of the population has this blood type, so donors are always needed.</td>
</tr>
<tr>
<td>B-</td>
<td>1 in 67</td>
<td>This is a very rare blood type. Only 1% has this type. It is important to always have B negative blood donations.</td>
</tr>
<tr>
<td>AB+</td>
<td>1 in 29</td>
<td>This is a rare blood type, occurring only in 3% of the population. Persons with AB positive blood are known as <em>Universal Receivers</em>, as they may receive blood from persons with other blood types. Due to their rare nature, AB positive donors are always needed.</td>
</tr>
<tr>
<td>AB-</td>
<td>1 in 167</td>
<td>This is the rarest blood type. Only ( \frac{1}{2} )% of persons has AB negative blood. Since this blood type is so rare, donors are especially needed. Donors may be called and asked to give, as shortages are common.</td>
</tr>
</tbody>
</table>
### Blood Types and Frequency

<table>
<thead>
<tr>
<th>Blood type and Rh factor</th>
<th>How many people have it</th>
</tr>
</thead>
<tbody>
<tr>
<td>O positive</td>
<td>40 out of 100</td>
</tr>
<tr>
<td>O negative</td>
<td>7 out of 100</td>
</tr>
<tr>
<td>A positive</td>
<td>34 out of 100</td>
</tr>
<tr>
<td>A negative</td>
<td>6 out of 100</td>
</tr>
<tr>
<td>B positive</td>
<td>8 out of 100</td>
</tr>
<tr>
<td>B negative</td>
<td>1 out of 100</td>
</tr>
<tr>
<td>AB positive</td>
<td>3 out of 100</td>
</tr>
<tr>
<td>AB negative</td>
<td>1 out of 200</td>
</tr>
</tbody>
</table>

### If you have… You can receive...

<table>
<thead>
<tr>
<th>O positive</th>
<th>O+, O-</th>
</tr>
</thead>
<tbody>
<tr>
<td>O negative</td>
<td>O-</td>
</tr>
<tr>
<td>A positive</td>
<td>A+, A-, O+, O-</td>
</tr>
<tr>
<td>A negative</td>
<td>A-, O-</td>
</tr>
<tr>
<td>B positive</td>
<td>B+, B-, O+, O-</td>
</tr>
<tr>
<td>B negative</td>
<td>B-, O-</td>
</tr>
<tr>
<td>AB positive</td>
<td>All types, + or -</td>
</tr>
<tr>
<td>AB negative</td>
<td>AB-, A-, B-, O-</td>
</tr>
</tbody>
</table>
What Good Is a Blood Donor?

A blood donor is good for...

People who go through windshields and red lights.
Someone with cancer, anemia, or leukemia.
People who undergo surgery.
Barefoot kids who aren’t careful.
People who are nearly out of life because they are out of blood.
A little girl who does not know she has leukemia-- or why.
A newborn boy who needs the gift of life.
People who need open heart surgery.
People who need a liver, lung, heart, or kidney transplant.
New babies who are struggling to live.
New mothers needing a transfusion.
Little kids who are poisoned or fall on something sharp.
People who fool around with something that explodes or shatters.
People who suffer from burns.
Tree climbers and daredevils.
People in the wrong place at the wrong time.
People who are in a lot worse shape than most people.

You Can Be a Blood Donor!
Dear Parents:

<Later this month / This week / Next week>, our <specify grade level> grade students will be studying the human circulatory system and learning how different components of blood are essential to life. This area’s non-profit community blood provider, Manatee Community Blood Center, brought us this exciting unit, called My Blood, Your Blood.

Our students will see a video, participate in discussion, and work with related study materials. There’s also a My Blood, Your Blood Web site you and your child may enjoy visiting: http://www.mybloodyourblood.org.

Along with its terrific science content, the My Blood, Your Blood program carries an important community service message: adults who volunteer to donate blood can help save the lives of children and other people who have been in accidents, are seriously ill, or need surgery.

Our class work is reinforcing the science aspect of My Blood, Your Blood. To give the children first-hand experience with the community service message, our school is sponsoring a blood drive from <time> to <time>, <day>, <date>, in the <place>. Your child will invite you to participate, and I encourage you to get involved—as a donor, volunteer or cookie baker, or by inviting your adult (17 and older) family members, friends, neighbors and co-workers to donate at our blood drive.

It takes 70 blood donations every day to meet the needs of patients in Blake Medical Center and Manatee Memorial Hospital, served by Manatee Community Blood Center. Our school’s goal is <##> donations—enough to meet the community’s blood needs for <describe period of time>.

<Describe local situation—are donations or usage rising or falling? --will this drive help because it’s right before or after a major holiday or in January?> --other special needs?>

Volunteer blood donors must be at least 17 years old, weigh 105 pounds, and be in good health. If you have specific questions about whether you’re eligible to donate blood, you may call Manatee Community Blood Center at 746-7195. A pledge slip is attached to this letter. Please complete and return it to your child’s teacher. If you are not able to donate, please indicate that on the pledge form and return it. Manatee Community Blood Center is hosting a <describe event—ice cream party, pizza party or other reward> for the class that returns the most pledge slips.

Sincerely,

<Name>
Principal
PLEDGE SLIP

{Name of School} Blood Drive

{time} to {time}, {day}, {date}

{place}

Please print and check all boxes that apply:

I, ________________________________, will volunteer to help save lives by:

- [ ] Giving blood.
- [ ] Calling five friends/relatives and asking them to give blood.
- [ ] Bringing refreshments for blood donors or the winning classroom.

I, ________________________________, am unable to volunteer at this time.

Signature: ____________________________

Phone Number: ________________________
AMAZING FACTS ABOUT BLOOD

♦ Stacked one upon another in a single column, the red blood cells in our bodies would tower thirty thousand miles high!

♦ The President of the United States of America designated January as National Blood Donor Month.

♦ Former President Ronald Reagan received 12 units of blood after the assassination attempt. He was transfused with 8 units of red blood cells, 3 units of plasma, and 1 unit of platelets.

♦ Former President Jimmy Carter is a multi-gallon blood donor.

♦ Platelets must be used within five days of collection, so donations are especially needed around 3-day weekends.

♦ People who have been in car accidents and have lost a lot of blood can need transfusions of 50 units or more of red blood cells.

♦ Giving blood will not decrease your strength because the blood is replaced very quickly.

♦ Sickle-cell disease is an inherited disease that affects more than 80,000 people in the United States, 98% of whom are of African descent. Some patients with complications from severe sickle-cell disease receive blood transfusions every month.

♦ If you began donating blood at age 17 and donated every 56 days until you reached 76 years old, you would have donated 48 gallons of blood.

♦ A newborn baby has about 1 cup of blood in his or her body.

♦ The average liver transplant patient needs 40 pints of red blood cells, 30 pints of platelets, 20 bags of cryoprecipitate, and 25 pints of fresh frozen plasma.

♦ The average heart surgery uses six pints of red blood cells and six pints of platelets.

♦ An average adult man has about 10 to 12 pints (5 to 6 L) of blood. An average woman has about 8 to 10 (4 to 5 L). The heart circulates this blood more than 1,000 times a day.

♦ If all the body’s blood vessels were laid end to end, they would stretch 60,000 miles (96,000 km). That’s about two and a half times around the world.

♦ The largest arteries and veins are about 1 inch (2.5 cm) across. The smallest capillaries are much finer than human hair.
MATH FUN FACTS

♦ Your heart beats over 100,000 times a day.
♦ Your heart beats about 42,000,000 times every year.
♦ There are about 60,000 miles of blood vessels in our bodies.
♦ Each day, your heart pumps enough blood to fill 70 bathtubs.
♦ 1,835 gallons of blood are pumped through our bodies each day.
♦ The blood travels through 60,000 miles of blood vessels every 20 seconds.
♦ There are 150,000,000,000 red blood cells in one ounce of blood.
♦ There are approximately 2.4 trillion red blood cells in one pint of blood.
♦ Each red blood cell lives about 120 days.
♦ A red blood cell measures .003 of an inch across.
♦ A person must be at least 17 years old to donate blood.
♦ Red blood cells are produced at a rate of 3,000,000 per second.
♦ A human heart can beat for 100 years or more.
♦ In every drop of blood, there are 250,000 red blood cells.
♦ A child’s average heart rate is 90 beats per minute.
♦ An adult’s average heart rate is 70 beats per minute.
♦ An infant’s average heart rate is 120 times per minute.
♦ Blood has 4 main components.
♦ Your heart weighs about 10 ounces.
♦ The heart has 4 chambers.
♦ It is estimated that one red blood cell makes 40,000 journeys around the body monthly!
♦ Every 3 seconds someone needs a blood transfusion.
♦ Blood makes up about 8% of a person’s body weight.
♦ 23,000,000 units of blood components are transfused nationwide each year.
♦ 60% of the U.S. population is eligible to give blood, but only 5% do.
♦ Approximately 55% of blood is plasma.
♦ The heart pumps 4,300 gallons of blood per day.
♦ An adult has about 35,000,000,000 (35 billion) red blood cells. Each cell lives about 4 months. Before it wears out, it makes about 160,000 trips to and from the heart.
Idiomatic Expressions

Valentines Heart

Cold Blooded

Heavy Hearted

Red As A Beet

Sweetheart

Big Hearted

Blue Blooded
Idiomatic Expressions

Heartbroken

Hearts and Flowers

Heart to Heart

Blood Curdling Scream

Blood Bath

Wear your heart on your sleeve

Blood Brothers
Animal Heartbeats per Minute

<table>
<thead>
<tr>
<th>ANIMAL</th>
<th>BEATS PER MINUTE</th>
<th>ANIMAL</th>
<th>BEATS PER MINUTE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bat</td>
<td>750</td>
<td>Camel</td>
<td>30</td>
</tr>
<tr>
<td>Cat</td>
<td>120</td>
<td>Human Child</td>
<td>90</td>
</tr>
<tr>
<td>Chicken (Adult)</td>
<td>280</td>
<td>Cow</td>
<td>64</td>
</tr>
<tr>
<td>Dog</td>
<td>110</td>
<td>Elephant</td>
<td>35</td>
</tr>
<tr>
<td>Giraffe</td>
<td>65</td>
<td>Goat</td>
<td>90</td>
</tr>
<tr>
<td>Guinea Pig</td>
<td>280</td>
<td>Hamster</td>
<td>450</td>
</tr>
<tr>
<td>Horse</td>
<td>45</td>
<td>Human Adult</td>
<td>70</td>
</tr>
<tr>
<td>Human baby</td>
<td>120</td>
<td>Lion</td>
<td>40</td>
</tr>
<tr>
<td>Monkey</td>
<td>190</td>
<td>Mouse</td>
<td>520</td>
</tr>
<tr>
<td>Pig</td>
<td>60</td>
<td>Rabbit</td>
<td>205</td>
</tr>
<tr>
<td>Rat</td>
<td>328</td>
<td>Sheep</td>
<td>75</td>
</tr>
<tr>
<td>Skunk</td>
<td>166</td>
<td>Squirrel</td>
<td>250</td>
</tr>
</tbody>
</table>

**NOTE:**

- The students will find it very interesting to compare heartbeats between their favorite animals and themselves.

- Clapping hands at the rate of an elephant or a lion’s heartbeat is fairly achievable. Clapping for a giraffe or a goat’s is still possible. However, clapping that busy hamster’s heartbeat outpaces us!

- All animals’ heart rates vary depending on their activities. The rates given are average for that specific animal.
## Homeroom Class Competition
### Blood Drive Sign-in Sheet

<table>
<thead>
<tr>
<th>Name</th>
<th>Homeroom Teacher</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
ACRONYMS

1. AABB  American Association of Blood Banking
2. ABC    America’s Blood Centers
3. AHCA   Agency for Health Care Administration (State of FL)
4. AIDS   Acquired Immunodeficiency Syndrome
5. BBP    Bloodborne Pathogen
6. BMW    BioMedical Waste
7. CBER   Center for Biologics Evaluation and Research
8. CCBC   Council of Community Blood Centers
9. CDC    Centers for Disease Control
10. CDCP   Centers for Disease Control and Prevention
11. CFR    Code of Federal Regulations
12. CLIA   Clinical Laboratory Improvement Amendment
13. EPA    Environmental Protection Agency
14. FBS    Florida Blood Services (St. Petersburg)
15. FDA    Food and Drug Administration
17. GMP    Good Manufacturing Practices (cGMP – current GMP)
18. HAZCOM Hazardous Communication
19. HBV    Hepatitis B Virus
20. HCFA   Health Care Finance Administration (State of FL)
21. HCV    Hepatitis C Virus
22. HIV    Human Immunodeficiency Virus
<table>
<thead>
<tr>
<th></th>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>23.</td>
<td>MCBC</td>
<td>Manatee Community Blood Center, Inc.</td>
</tr>
<tr>
<td>24.</td>
<td>MSDS</td>
<td>Material Safety Data Sheet</td>
</tr>
<tr>
<td>25.</td>
<td>NIST</td>
<td>National Institute of Standards and Technology</td>
</tr>
<tr>
<td>26.</td>
<td>OSHA</td>
<td>Occupational Safety and Health Administration</td>
</tr>
<tr>
<td>27.</td>
<td>PDI</td>
<td>Post Donor Information</td>
</tr>
<tr>
<td>28.</td>
<td>PPE</td>
<td>Personal Protective Equipment</td>
</tr>
<tr>
<td>29.</td>
<td>QA</td>
<td>Quality Assurance</td>
</tr>
<tr>
<td>30.</td>
<td>QC</td>
<td>Quality Control</td>
</tr>
<tr>
<td>31.</td>
<td>SOP</td>
<td>Standard Operating Procedure</td>
</tr>
<tr>
<td>32.</td>
<td>STD</td>
<td>Sexually Transmitted Disease</td>
</tr>
<tr>
<td>ACRONYMS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>----------------</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| **1. AABB** | **American Association of Blood Banking**  
*The licensing agency that writes* The Standards of Blood Banking, *published every 2 years, providing standards for blood banking. Also facilitates educational programs, i.e., teleconferences, resources, and national meetings.* |
| **2. ABC** | **America’s Blood Centers**  
*An organization composed of leaders and top scientists of community blood centers that gives member blood centers influence on an equal par with the American Red Cross.* |
| **3. AHCA** | **Agency for Health Care Administration (State of FL)**  
*As the major planning, financing, and regulatory agency for Florida’s largest industry, AHCA is guided by its mission to be champion of accessible, affordable, quality health care for all Floridians. The agency is an aggressive, responsible, and impartial regulator of all healthcare facilities, practitioners, and health insurers. Furthermore, it is responsible for statewide management of Florida licensure and the federal CLIA certification program.* |
| **4. BBP** | **Bloodborne Pathogen**  
*The Bloodborne Pathogen Standard instructs the employer to determine exposure risks of personnel, implement a bloodborne pathogen program, provide hepatitis B vaccine, and train employees in safe practices for working with infectious material.* |
| **5. BMW** | **BioMedical Waste**  
*Biomedical waste is any solid or liquid waste which may present a threat of infection to humans, including nonliquid tissue, body parts, blood, blood products, and body fluids from humans and other primates; laboratory and veterinary wastes which contain human disease-causing agents; and discarded sharps (needles). Every blood bank/center is required to have a written plan for handling biomedical waste (BMW).* |
| **6. CBER** | **Center for Biologics Evaluation and Research**  
*Within the FDA, the Center for Biologics Evaluation and Research through the office of Compliance is responsible for ensuring compliance with the GMP regulations. This is also the section to which applications for licenses, and error and accident reports are made.* |
| **7. CCBC** | **Council of Community Blood Centers**  
*The Council of Community Blood Centers has become the agency known as America’s Blood Centers (ABC).* |
8. CDC  Centers for Disease Control
The Centers for Disease Control and Prevention is recognized as the lead federal agency for protecting the health and safety of people – at home and abroad, providing credible information to enhance health decisions, and promoting health through strong partnerships. The CDC is the authoritative reference on countries in which malaria is endemic – a major factor in considering donor suitability. CDC’s mission is to promote health and quality of life by preventing and controlling disease, injury, and disability. This mission is accomplished by working with partners throughout the nation and world to monitor health, detect and investigate health problems, conduct research to enhance prevention, develop and advocate sound public health policies, implement prevention strategies, promote healthy behaviors, foster safe and healthful environments, and provide leadership and training.

9. CDCP  Centers for Disease Control and Prevention
See explanation above for CDC.

10. CFR  Code of Federal Regulations
The CFR is a FDA publication of general and permanent rules and regulations that govern blood operations, laboratories, and other medical functions throughout the United States. The Code is divided into 50 titles which represent broad areas subject to Federal regulation. The blood banking industry must be in compliance with Title 21 – Food and Drugs, Subchapters C-Drugs, F-Biologics, H-Medical Devices.

11. CLIA  Clinical Laboratory Improvement Amendment
Congress passed the Clinical Laboratory Improvement Amendment in 1988 establishing quality standards for all laboratory testing to ensure the accuracy, reliability, and timeliness of patient test results regardless of where the test was performed. The final CLIA regulations were published on February 28, 1992.

12. EPA  Environmental Protection Agency
As a Federal agency, the EPA’s mission is to protect human health and to safeguard the natural environment – air, water, and land – upon which life depends. Included in EPA’s purpose is to ensure that all Americans are protected from significant risks to human health and the environment where they live, learn, and work. Additionally, the EPA ensures that Federal laws protecting human health and the environment are enforced fairly and effectively.

13. FBS  Florida Blood Services (St. Petersburg)
FBS is a blood center that collects, tests, prepares, and distributes blood and blood products. This is where MCBC sends blood for testing.
14. FDA  
**Food and Drug Administration**  
The FDA is the regulatory agency that establishes and enforces minimum requirements that are legally binding in the manufacture and distribution of products. All drugs and related products are required to be proven safe prior to marketing.

15. FD&C Act  
**Federal Food, Drug, and Cosmetic Act (1938)**  
Congress passed the Federal Food, Drug, and Cosmetic Act in 1938, requiring all new drugs and related products (includes blood components) to be proven safe prior to marketing.

16. GMP  
**Good Manufacturing Practices (cGMP – current GMP)**  
Contained within the CFR, published by the FDA, are the regulations known as Good Manufacturing Practices. They are legal requirements for all blood establishments. Think of the cGMPs as “road maps” to guide blood bankers to do their jobs better – to do things right the first time and to engineer quality into processes.

17. HAZCOM  
**Hazardous Communication**  
The Hazardous Communication Standard requires an established list of hazardous chemical substances in the workplace, a library of Material Safety Data Sheets, ensuring proper labeling of all containers, and establishing workplace safety practices.

18. HCFA  
**Health Care Finance Administration (State of FL)**  
HCFA is a federal agency within the U. S. Department of Health and Human services. As a regulatory agency, it has established requirements for laboratories to follow a quality assurance program. In the stewardship of their health care programs, they lead the nation’s health care system toward improved health for all.

19. MCBC  
**Manatee Community Blood Center, Inc.**  
A nonprofit organization dedicated to maintaining the highest standards of delivery of an adequate blood supply to meet the needs of our community and others. MCBC provides all blood products for Manatee County.

20. MSDS  
**Material Safety Data Sheet**  
This hazard communication tool gives details on chemical and physical dangers, safety procedures, and emergency response procedures. Employers must have one for every chemical and hazardous product in the workplace. An MSDS provides additional information that cannot easily be put on the label.
21. NIST

**National Institute of Standards and Technology**

This organization has all kinds of measurement standards available for purchase. It is the most common source of measuring standards used for calibration on measuring devices, such as scales, blood pressure cuffs, and centrifuges.

22. OSHA

**Occupational Safety and Health Administration**

Within the U.S. Department of Labor, the Occupational Safety and Health Act established for the first time a national policy for safety and health. The mission of OSHA is to save lives, prevent injuries, and protect the health of America’s workers through:

- developing mandatory job safety and health Standards and enforcing them;
- maintaining a reporting and recordkeeping system to monitor job-related injuries and illnesses;
- encouraging employers and employees to reduce workplace hazards and implement or improve safety and health programs;
- establishing training programs to increase the number and competence of occupational safety and health personnel.

23. PDI

**Post Donor Information**

This is information the blood center receives about a donor after his/her donation. This information may come from the donor, doctor’s office, a third party, or other health care professionals. Evaluation of the information determines the acceptability of the current product or past products and/or the future eligibility of the donor. The process also allows for market withdrawal of unsuitable products in current inventory, or notification of recipients and/or consignees of past donations determined unsuitable, based on the new information received.

24. PPE

**Personal Protective Equipment**

PPE – gloves, goggles, face shields, and lab coats – are worn while performing tasks known to cause the employee to come in contact with a chemical or biohazard to reduce or eliminate the risk of injury and infection.

25. QA

**Quality Assurance**

QA involves the actions, planned and performed, to provide confidence that all systems and elements that influence the quality of a product are working as expected individually and collectively.

26. QC

**Quality Control**

QC is the component of quality assurance involving sampling and testing to determine the accuracy and reliability of an establishment’s personnel, equipment, reagents, and operations in manufacturing.
27. SOP

**Standard Operating Procedure**

SOPs are a group of standard operating procedures detailing the specific policies of a blood or tissue bank, and the procedures used by the staff/personnel. This includes, but is not limited to, procedures to: assess donor suitability, process, quarantine, release to inventory, label, store, distribute and recall cells or tissues. The SOPs explain how to follow the cGMPs!
Glossary/Vocabulary
See the Glossary in the back cover of the

1. **advertisement** To make public announcement of, especially to promote sales; to make known.

2. **A.I.D.S.** “Acquired Immunodeficiency Syndrome,” a disease that makes the immune system weak.

3. **altruism** Unselfish concern for the welfare of others; selflessness.

4. **alveoli** The tiny “bubbles” inside your lungs that fill with air as you breathe in.

5. **anemia** A deficiency in the oxygen-carrying material of the blood, measured by concentrations of hemoglobin and red blood cell counts.

6. **aorta** The large blood vessel that leads away from the heart.

7. **apheresis** A special kind of blood donation that separates the blood into its parts. Blood is drawn from a donor, separated, and the unneeded parts are then returned to the donor.

8. **arteries** Blood vessels that carry blood away from the heart to the rest of the body.

9. **autologous donation** Blood that is given that will be used by the person who gave it. This is done for a planned surgery.

10. **bacteria** Tiny one-celled beings; some are helpful in the body and others make people sick.

11. **blood** A fluid that circulates through the heart, arteries, veins, and capillaries. It carries nutrients and oxygen to the tissues, and takes away waste materials and carbon dioxide.

12. **blood bank** A place where blood is collected, processed, and stored for future use in transfusion.

13. **blood drive** An event in which blood is collected from a group of people.

14. **blood donor** A person who allows blood to be taken from his/her body into a plastic bag. This blood is then given to someone else.

15. **blood pressure** The pressure of the blood within the arteries; this is caused by the pumping of the heart.

16. **blood transfusion** Taking blood from one person and giving it to another person.
17. **blood type**  Human beings have one of four blood types, or groups: A, B, O, or AB.

18. **blood vessel**  A tube-like structure that carries blood throughout the body.

19. **bone marrow**  The tissue inside bones that makes blood cells and stores fat.

20. **bloodmobile**  A motor vehicle equipped for collecting blood from donors.

21. **canteen**  A temporary or mobile place to eat. The snack area at a blood bank or on a bloodmobile is called a canteen.

22. **capillaries**  The smallest blood vessels in the body. The oxygen and carbon dioxide exchange happens in the capillaries.

23. **carbon dioxide**  Gas that our cells give off as a waste product. It is removed from the body by our lungs when we exhale.

24. **cardiac**  Anything to do with the heart.

25. **cell**  The smallest part of a living thing. It consists of one or more nuclei, cytoplasm, various organelles, and other matter.

26. **centrifuge**  A machine made up primarily of a compartment spun about a central axis to separate materials of different density. This machine is used at the blood bank to separate blood components.

27. **circulation**  The movement of blood in the body.

28. **circulatory system**  The system in the body that carries nutrients and oxygen to the cells and carries waste away. The blood, heart, and blood vessels make up the circulatory system.

29. **component**  A part or ingredient of something.

30. **deferral**  To put off until a future time; postpone.

31. **directed donation**  Blood that is given for someone in particular. This can be done before a surgery.

32. **donation**  The act of giving something; a gift or contribution.

33. **erythrocyte**  A red blood cell.

34. **fibrin**  A part of a blood clot. It is like a net made by the blood components.

35. **germs**  Very tiny living things, some of which are harmful if they attack the body’s cells.
36. heart  Body part that acts like a pump, constantly pushing blood throughout the body. It is the center of the circulatory system.

37. hemoglobin  This is what makes red blood cells red. It carries the oxygen.

38. hemophilia  A hereditary plasma-coagulation (clotting) disorder characterized by excessive, sometimes spontaneous bleeding.

39. hepatitis  Inflammation of the liver, caused by infection or toxic agents, characterized by jaundice, and usually accompanied by fever.

40. HIV  Human Immunodeficiency Virus is a bloodborne virus that is usually transmitted by blood and body fluids (through sexual contacts, sharing needles, or mother to newborn) and may lead to AIDS (Acquired Immunodeficiency Syndrome).

41. immunity  A resistance to a germ that causes disease.

42. leukocyte  A white blood cell.

43. liquid gold  Plasma donations from the apheresis process are commonly called “liquid gold” because of its golden color and its valuable use for cancer patients.

44. malaria  An infectious disease characterized by cycles of chills, fever, and sweating, transmitted by the bite of the infected female anopheles mosquito.

45. nucleus  The center of a cell. It contains all of the cell’s information and instructions.

46. nutrient  Something that nourishes or promotes growth or development.

47. oxygen  Gas in our air that we need to breathe in order to live. Our body’s cells use it to make energy.

48. pathogen  Bacteria, virus, or other disease-causing organism.

49. platelets  Sticky parts of the blood that help to stop bleeding from a cut or any other wound by creating a scab.

50. plasma  The pale yellow liquid part of the blood that is made up mostly of water. It also contains salt, sugar, and proteins.

51. pulse  Throbbing caused by the regular pumping of the heart.

52. pulse points  The places you can easily feel your pulse: wrist and neck.

53. recipient  One that receives or gets something.
54. **recruit**  To find new members, workers, or volunteers.

55. **red blood cells**  A part of blood that carries oxygen to body cells and picks up carbon dioxide.

56. **scab**  The crust-like material that covers a healing wound.

57. **scientific method**  The process necessary for proper scientific investigation. The basic steps include: identifying the problem, creating a hypothesis, listing materials, writing a procedure, and documenting a conclusion.

58. **sickle-cell anemia**  A hereditary anemia characterized by the presence of oxygen-deficient sickle shaped cells, episodic pain, and leg ulcers.

59. **sphygmomanometer**  A medical instrument used for measuring blood pressure.

60. **spirometer**  An instrument for measuring the volume of air entering and leaving the lungs.

61. **spleen**  A body organ that filters out old blood cells and stores blood.

62. **stem cells**  Cells that can produce a variety of other cells.

63. **sterile**  Free from bacteria or other germs.

64. **stethoscope**  A tool used to measure blood pressure, heart rate, and lung sounds.

65. **universal donor**  A person of blood type O. Type O blood can be given to people of any type of blood. This is especially important in emergency cases when there is not time for blood typing.

66. **universal recipient**  A person of blood type AB. This person can receive any type of blood.

67. **vaccination**  A shot given in order to protect against a specific disease.

68. **veins**  Blood vessels that carry blood back to the heart from everywhere in the body.

69. **ventricles**  Small chambers in the heart that move the blood into and out of the main blood vessels.

70. **virus**  A specific pathogen or germ.

71. **white blood cells**  The parts of the blood that attack and get rid of germs that have entered the body.
BIBLIOGRAPHY

Recommended Grade Levels

3-5

6-8

K-5

K-8

K-8

K-5

K-8

K-8

3-5

3-5

3-5

K-8

K-2

K-2

K-5

K-5


**INTERNET RESOURCES**

www.aabb.org

www.access.gpo.gov/su_docs/aces/fr-cont.html (Federal Register)

www.americasblood.org

www.encyclopedia.com/articles
American Heart Association
Comprehensive heart disease resource includes risk factors and prevention info, A-Z guide to heart and stroke, and scientific and technical data.
http://www.americanheart.org/


The Circulatory System
The Circulatory System: Click here to hear a heartbeat. The Circulatory System has two major subdivisions - the cardiovascular system and the lymphatic system. The cardiovascular system can be compared to a muscular pump equipped with one-way valves
http://library.advanced.org/3007/circulatory.html

The Circulatory System
The Circulatory System: view this heart for a bigger and better view. The circulatory system, also known as the cardiovascular system, is composed of the heart and blood vessels.
http://www.msms.doe.k12.ms.us/biology/anatomy/circulatory/circulatory.html

Circulatory System Theme Page
The primary focus of the Community Learning Network (CLN) is to help K-12 teachers integrate Information Technology into their classrooms. This CLN menu page provides links to Science curricular resources and instructional materials (lesson plans).
http://www.cln.org/themes/circulatory.html

COHIS - Cardiovascular Diseases
Community Outreach Health Information System discusses congestive heart failure, hypertension, anemia and other circulatory and blood conditions.
http://www.bu.edu/cohis/cardvasc/cvd.htm

CuriousHeart.com
Read a complete description of the heart's processes, functions, and various muscles. Includes details about the circulatory system.
http://www.curiousheart.com/

The Franklin Institute Online: “Lifeblood” http://sln.fi.edu/biosci/blood/blood.html
Harvey, William - Britannica Online
Learn about the English physician who discovered the functional nature of the circulatory system and the heart. Includes related articles.
http://www.britannica.com/eb/article?eu=109216

The Heart and the Circulatory System
Access Excellence Classic Collection The Heart and the Circulatory System by Roger E. Phillips, Jr. Human heart, frontal view (Carolina Biological Supply Company.) Introduction: Imagine that you are living in the year 1535…
http://www.accessexcellence.com/AE/AEC/CC/heart_background.html

Heart: An Online Exploration
Go on a virtual exploration of the heart, examining its structure, function, and development.
http://sln.fi.edu/biosci/heart.html

Hess, Walter Rudolf - MSN Encarta
Chronicles the physiologist’s research on the circulatory and nervous systems.
http://encarta.msn.com/find/Concise.asp?ti=0B4B6000

Laura Nagy Lesson Plan
Lesson Title: Circulatory System Subject Area: Science Grade Level: Fifth Grade Objectives: The student will practice using the Internet to find information while following hyperlinks. The student will search the web for information.
http://www.arches.uga.edu/~jpritche/lnagy.html

MSN Encarta - Circulatory System
Find out how the arteries, veins, capillaries, heart and lungs all work together to keep oxygenated blood flowing through the body.
http://encarta.msn.com/find/Concise.asp?ti=03C3E000

ProTeacher! Heart and circulatory system lesson plans for elementary school teachers in grades K-5 including activities.
ProTeacher! Heart and circulatory system lesson plans for elementary school teachers in grades K-5 including activities, facts about the heart, how it pumps blood, arteries, veins, classroom and teaching ideas.
http://www.proteacher.com/110074.shtml

RECOMMENDED READING

K-5

6

7

8

K-2

8