

Hearts Keep On Pumping

Standards:

S.A.12, S.B.1,
E.A.2,
E.A.6
M.A.3
C.C.3,

Grade: 2

Science Concepts: Mammals need a heart to survive. Students understand the heart is an important organ within the body. They understand what the heart does for the body and how it transports blood, oxygen and food to the rest of the body. Students understand the heart also helps to rid the body of carbon dioxide.

Materials: stethoscope, blood cuff, heart rate graph, plates, little notes that say, “ Do Not Touch,” magnifying lenses, plastic bags (opaque), worksheets showing the whole heart, the heart in sections and the circulatory system within the human body, construction paper, colored pencils or crayons, long white lab coat, stickers, large drawing of a heart on butcher paper, large drawing of human body showing arteries and veins, large drawing of a heart, colored markers, calculators, and thank you letters for items donated.

Vocabulary: heart, heart rate, pulse, right and left ventricle, right and left auricle, valve, artery, veins, stethoscope, sections, key, overlay, blood, circulate, oxygen, red blood cells, white blood cells, platelets

Gear Up: You will need to find animal hearts for the gear up. We have a local butcher who is going to save me a few cow and pig hearts (maybe sheep). If this is not possible in your area, then fish hearts will work as well. Just freeze them from the summer fishing adventures. I have also purchased a plastic human replica heart. Have the classroom or lab set up so the students are working in smaller groups (4-5 students). Place a sticker on one of the desktops or seating areas. Place one plastic covered plate with a heart at each group. On top of each plate put the note card telling the students not to touch. This alone will get the curiosity up in the classroom. Explain that today we'll be taking a much closer look at a very important body part. Now tell the class there is one sticker at their group. The person with the sticker is the person who will remove the plastic bag from the hidden item. These students become lab assistant for that group and will be rotating their plate clockwise to another group every few minutes so everyone can see the different hearts. Ask: What are these body parts called? How do you know? Have you ever seen an animal heart before? What animals do you think these come from? Does a human heart look different or the same as animal hearts? Do our hearts do the same job as these animal hearts did? Is our heart as big or smaller than these animal hearts?

Process Skills: observation, communication

Explore: Ask these questions: What is the heart and does it have more than one job? As students answer or create more questions make sure to write them on the board for later discussion.

Do a mini lesson on the use of a calculator and the multiplication key. To make this relevant students should check their heart rate at rest, jumping, running, and maybe doing push-ups for one minute. Students will need to count their heart beat for 15 seconds after each activity, write that number down and then multiply that number by four. Each student should then record their pulse rate on their own graph.

I have invited the school nurse into our classroom to help teach the students about their hearts. She will model how to find and then take a person's pulse rate. Then each student will find their own pulse and count out their rate. When everyone has a good idea of how it is done they will partner up and take each other's pulse at rest (for the variable) and then again after jumping, running in place and doing push-ups for one minute. We will create a graph for our findings based on previous lessons on graph making. Students will then record their four findings on the graph.

Mrs. Milton will also bring in her stethoscope so students can listen to their heart beat. Discuss how the heart pumps blood around the whole body. It forces the blood to circulate bringing new oxygen to all body parts and removing carbon dioxide.

Process Skills: observation, communication, interpreting

Generalize: What did you notice about your heart rate when you were relaxed? What happened when you jumped around a bit? Why? Have students compare their graphs. What did they notice?

After looking at the animal hearts, can you tell where our blood enters the heart and where it leaves the heart? Our own heart has the same types of arteries and veins. Using a worksheet of a human heart, model where the arteries, veins and valves are located. Then see if they can find them on the animal hearts.

Process Skills: Observation, communication, interpreting

Explore Day Two: What is the main job of our hearts? Students label the parts of the heart with your help. Tape the large drawing of the heart to the wall. Using a ruler draw a line from the right ventricle. Write the name of this part on the line. Repeat with all four chambers making sure your students are labeling properly. Label some of the valves as well and describe how they work. Ask: By looking at this drawing guess which direction the blood flows through the heart. Accept all answers until the correct one is given. Draw arrows on the heart to show direction of blood flow. Add this to the wall chart key and make sure your students do the same.

Enlarge drawing of body showing how the blood circulated throughout the body before returning to the heart. Using markers highlight in blue and red the body's

arteries and veins. Students should create a colored key for this worksheet as well. Students should understand that all drawings like maps need keys to guide the viewer.

Homework: Students are to take the drawing of the heart home to share it with their parents. They are to explain the function of the heart and how it pumps blood. They are to explain the arrows they've drawn in and what they mean. On the bottom of the worksheet is a place for parent's comments and a signature to show the student shared the information. Also on the worksheet is a section where students are to write in four or more facts about the heart. These facts can be ones they learned in class or facts they learned from their parents.

Process Skills: Communication, observing

Assess/Apply: Students receive another copy of the heart. They are to color in the veins and arteries showing the direction blood flows. They are also to create a key to go along with their drawing. Students are to write four or more sentences telling what they learned about the heart.

Process Skills: Communication, observing,

Extensions: Mini lesson: Teach how to do overlays so students can add more body parts as they learn about them. Model how a student can take tracing paper and add body parts to the main drawing, labeling as they go. Students can then add additional body parts to their drawings as they feel comfortable.

Pictures and information of the heart and body can be found at

www.Bartleby.com

<http://sln.filedu/biosci/systems/circulation.html>

<http://www.bbc.co.uk/science/humanbody/body/factfiles/heart/heart.shtml>

www.innerbody.com/image/cardov.html.

or *How Your Body Work* by Evan-Moor. I have found lots of information on line as well as in our local library.

Scoring Guide for Hearts Keep On Pumping

Criteria	5	3	1
Observing	Student correctly labels each of the heart's parts. Student correctly labels the key to match their colored drawing.	Student correctly labels some of the heart's parts. Student creates a key but doesn't color or label it properly.	Student couldn't identify any of the heart's parts correctly. Student doesn't create a key to go along with their colored drawing.
Communication	Student correctly describes what the heart does for the body. Student shows understanding of the veins and arteries. Student adds extra descriptive information on the heart and veins.	Student correctly describes what the heart does for the body. Students has some understanding of veins and arteries.	Student describes some of the functions of the heart. Student shows some understanding of veins and arteries.
Conventions	All words were spelled properly. Student's handwriting is neatly written. Student writes in complete sentences, using the proper punctuation and capitalization. Student uses a extra detail to grab the reader's attention.	Sentences were written with only a few mistakes. Student's handwriting is neatly written. Student did not write in complete sentences, use proper punctuation,	Multiple misspelled words within each sentence. Student's handwriting is not neatly written. Student did not apply proper punctuation or capitalization rules

Total: _____

Comments: _____