

GRADE 2: LESSON PLAN 1

ANATOMY: WHAT DOES THE HEART DO?

Goals

Students will understand the basic function of the heart and identify its main parts.

Instructional objectives

Students will be able to

1. Identify the heart in relation to other main structures in the body, including the lungs, brain, and stomach.
2. Identify the basic physical characteristics of the heart.
3. Identify the main parts of the heart.

Background information

The heart sits between the two lungs, slightly to the left of the center of the chest. It acts as a pump, pushing blood through the body. The heart's walls are made of thick muscle. The heart has four chambers. The left and right side of the heart are separated by a thick wall of muscle called the septum. Within the heart, there are 4 heart valves, which regulate blood flow. When the heart squeezes (or contracts), it pushes oxygen-rich blood out of the heart and through the arteries to the organs, tissues, and cells of our bodies. The largest artery in the body is called the aorta. All blood that travels out of the heart passes through the aorta on its way to other parts of the body. This blood reaches the rest of the body through arteries that branch out and become smaller the farther they are located from the heart. The veins carry oxygen-poor blood back to the heart. The arteries and veins carry blood in a circle. The process of blood flow within your body is called circulation. The heart beats each time blood flows in and out.

Materials

1. Chart paper and markers
2. Illustration: Car (Activity 2–A)
3. Illustration: “The Main Organs” (Activity 2–B)
4. Worksheet: “Where Is Your...?” (Activity 2–C)
5. Worksheet: “What Does My Heart Look Like?” (Activity 2–D)
6. Worksheet: “The Inside of Your Heart: The Chambers” (Activity 2–E)
7. Worksheet: “The Inside of Your Heart: The Septum” (Activity 2–F)
8. Worksheet: “The Inside of Your Heart: The Valves” (Activity 2–G)
9. Worksheet: “The Inside of Your Heart” (Activity 2–H)
10. Rubber tubing, kitchen basting utensil, plastic bottles, funnel (or eye droppers and straws), water
11. Optional: Classroom computer with Internet access
12. Optional: Stethoscope

Introduction

Place illustrations of a car and the human body on posters at the front of the room (Activities 2–A and 2–B). On chart paper, have a T-chart prepared. Label one side of the T with the word “Car.” Down the side of the chart, write the following:

- What does it use for fuel?
- What keeps it in good condition?
- What causes it to have problems?

Ask students to think about a car when considering the questions on the chart. Allow

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students to share their ideas through group discussion, as you record their responses on the T-chart. Ask students how they would answer if asked the same questions about the human body. Write the word “Body” on the T-chart, and record students’ ideas. What do our bodies use for fuel? What keeps our bodies and hearts in good condition? What causes our bodies to become sick or tired? Expand on the car-body analogy, as students discuss how a car pumps oil through its parts, just as the heart pumps blood to parts of the body. Discuss how the ways in which we take care of a car determine its condition—just as our behaviors affect the health and functioning of our bodies.

Lesson procedures/activities

1. Explain to students that to take care of a car—to keep it running well—we need to have information about its parts and how they work. Likewise, we need to have information about the body and how it functions so we can take care of ourselves. Make another T-chart with the “Car” and “Body” labels at the top. Ask the class to brainstorm parts of a car and then try to think of similar parts of the body that have similar functions. (For example, many cars are controlled by computerized systems. The brain functions as the control center for our bodies.) After students have developed a list that indicates they understand the concept of body parts and systems, present an illustration of the human body with the main parts and structures identified (Activity 2–B). Discuss the general functions of the brain as the control center of the body, including reflexes; automatic functions, such as blinking, breathing, and digestion; sensory perception; and thinking processes, such as decision-making, etc. Discuss the general function of the lungs as the organs involved in the exchange of gases in the body—taking in oxygen and releasing carbon dioxide. Discuss the general function of the digestive system, which involves the breaking down of food into small parts so that the body’s cells can receive the nutrients. Tell students they will be focusing on the function of the heart and its parts.
2. Have students complete the worksheet “Where Is Your?” (Activity 2–C). Have them draw the brain, lungs, heart, and stomach/digestive system in the correct locations and write a brief description of the function of each. You may offer the students a “word bank” or vocabulary list to help them in writing their descriptions.
3. Ask students if they recall how to describe the size of the heart. Have them hold up their fists and explain that their hearts are about the size of their fists and that both will continue to grow at the same rate.

Show them that the heart sits between the lungs, just to the left of the center of the chest (reference Activity 2–B). Ask students if they know what the heart is made of. Have students flex their biceps muscle and then relax it. Tell them to use the hand on their other arm to feel the difference in the muscle. Explain that the muscles in the arms and legs are skeletal muscles, and that you have to think to control their movement. But the muscle in the heart is a smooth muscle, which contracts and relaxes on its own, even while a person is sleeping. Ask students if they have to think about their heart pumping. Ask what would happen if they had to think about making their heart pump, and what would happen if they forgot or needed to sleep. Students may think of other body functions that occur without our having to think about it. (Some were mentioned earlier regarding brain function: blinking, digesting, breathing.)
4. Display the worksheet “What Does My Heart Look Like?” (Activity 2–D) as a transparency. Discuss the arteries that lead from the left side of the heart that take oxygen and nutrients through the blood vessels of the body. Show how the blood travels in a circular path back to the right side of the heart, where the blood is then pumped to the lungs. Oxygen-rich blood is then pumped back to the heart. (Ask students if they remember the part of the car that pumps oil to its parts.) Give students the opportunity to experiment with a pumping action by using rubber tubing and a kitchen basting utensil; an eye dropper and a straw; or some similar device. Have them use the device to pump water from a cup and release it into a plastic bottle.
5. If your classroom has a computer with Internet access*, go to the Texas Heart Institute’s website (texasheart.org/projectheart) and give students the opportunity to view an animated version of the heart. Explain that the four chambers of the heart are like rooms in a house. The heart also has four valves, which act like doors, allowing blood to flow in and out of each chamber. Show students the wall between the right side and the left side of the

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heart, and identify this thick wall of muscle as the septum. Explain to students that every time the heart beats, blood flows in and out of the heart. When the heart beats, its valves open and close, making the lub-dub sound that you hear when you listen to the chest. Ask what instrument doctors and nurses use when they listen to the heart. Using an actual stethoscope (or a model made from rubber tubing and a funnel or the top section of a plastic bottle), allow students to listen to their own heartbeats. Show them how they can feel their heartbeat at pulse points on the inside of the wrist and the front of the neck and explain that this is the blood being pushed through the arteries. Help students in locating their pulse by having them place two fingers from one hand on the wrist of the opposite hand.

** (If a classroom computer is not available, Activities 2–E, 2–F, and 2–G may be used as transparencies for instruction.) Provide Activity 2–H for students to complete.*

- As students are sitting, ask them to find their pulse again. Ask them to stand and march in place for one minute and then have them check their pulse again. Then ask them to do jumping jacks for 30 seconds and have them check their pulse again. Draw their attention to other signs of an increased heart rate. Do their faces feel warmer? When they put their hands in front of their mouths, do they find that they are breathing harder? Are they perspiring a little? Is their pulse quicker? Guide them in a discussion about the types of activities that would increase the heart rate and exercise the heart.

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Guided practice

Using their worksheets and observations, ask students to Think-Pair-Share with a partner about the different things they have learned about the heart and other parts of the body. Tell the class they will each have one minute at a time to talk. You will call “time” when it is time to switch. Have partners switch after one minute of talking until it appears they have covered the information. Partners should put a check mark by each item on their worksheets when that information is covered by their partner.

Independent practice

Students will draw a picture of the body, draw the heart, lungs, brain, and stomach in the approximate locations and label each appropriately. Students will then write a description about what the heart does. You may allow the use of a word bank for vocabulary that is difficult for students to spell.

Adaptations

Students who have difficulty with writing may have their assignments adapted by allowing them to verbalize their responses, demonstrate, or illustrate in drawings. Students with physical challenges can approximate physical activities, such as swinging their arms instead of marching.

Extension

Using information from the animated model of a heart from the Internet, ask students to predict what would occur if the valves in the heart malfunctioned or if a small hole opened in one of the chamber walls. Have them explain their theories.

Assessment

You may use observations of students during class activities and responses for written activities to determine their understanding of the lesson objectives.

Objective	Demonstrated lesson objective	Partially demonstrated lesson objective	Did not demonstrate understanding of the objective
Identify by location the heart, brain, lungs, stomach	X		
Identify the heart's physical characteristics		X	
Identify the main parts of the heart	X		