



## **Your Roadmap to a Healthy Heart Virtual Experience Educator Companion Guide**

### **Overview:**

It's time to get your blood pumping! The American Heart Association (AHA) and the National Football League (NFL) have teamed up to show kids how 60 minutes or more of daily physical activity will benefit their health. In *Your Roadmap to a Healthy Heart*, students will investigate how the circulatory system provides their bodies with the oxygen and nutrients they need to not only play, but play well!

During this virtual experience, Minnesota Vikings players, Kyle Rudolph and Everson Griffen, along with American Heart Association volunteer Dr. Courtney Baechler will lead discussions with students about the many jobs of the circulatory system. They will also lead students in fun group activities that can help keep their hearts healthy. Through demonstrations and activities, students will discover how the heart pumps blood through blood vessels, as well as how the circulatory system works together with other body systems to help us move, work, and play. Students will also learn the important role that exercise plays in strengthening their heart muscle so that it works as best as it possibly can!

### **Students will:**

- explain the role of the circulatory system.
- describe the path and function of a red blood cell as it moves through the body.
- create and defend a design for a product that could promote heart health and evaluate the designs of their peers.

### **Preparation Activity: What Am I?**

*In preparation for the virtual experience, this activity activates students' prior knowledge and gauges what students already know about the circulatory system.*

### **Materials:**

- 25 sticky notes (5 sets of 5, individually labeled: heart, veins, arteries, circulatory system, physical activity)
  - Clock or timer
  - Chart paper
1. Divide your class into five groups. Explain that you will be putting a labeled sticky note on the back of one student in each group. It is the job of the other group members to describe the word, so the student is able to guess it correctly. Groups may want to give clues about the word's location, function or appearance.
  2. Set a timer for two minutes once the first set of sticky notes has been distributed.
  3. At the end of two minutes, reveal the word (if needed) and hold a short discussion. What helpful clues were given? Record ideas for each word on the chart paper.
  4. Once all words have been shared, engage the class in a quick discussion. Which word did they know the most about? Was one word more difficult than others to guess or describe? Keep the chart papers posted, and challenge students to add additional clues for each word after they participate in the virtual experience.

### **Follow-up Activities**

#### **Activity 1: Road Trip!**

*In this activity, students will compare and contrast a road map to the blood vessels that make up the circulatory system. They will further investigate the body's arteries, veins and capillaries by creating a map and accompanying set of GPS directions for a red blood cell as it travels through the body and helps other body systems along the way.*

## Materials:

- Chart papers from the “What Am I?” activity
- One piece of blank chart paper
- Access to the Internet
- Projected road map image (Use [Google Maps](#) to find a map of your local area)
- Copy of “About the Circulatory System” [handout](#) for each student
- Large paper for maps, one for each group
- Colored pencils or markers

1. Distribute the “About the Circulatory System” handout to each student, and project a road map on the board. Tell students to draw upon what they learned from the virtual experience and ask them to compare and contrast the two images. As students share, use a piece of chart paper to record their ideas in a Venn diagram. If needed, probe about each one’s function, size, traffic direction, intersections, and dead-ends.
2. Arrive at an understanding that roads of all sizes allow the movement of cars, usually in both directions. However, red arteries allow one-way movement of blood cells carrying oxygen and nutrients away from the heart, and blue veins allow one-way movement of deoxygenated blood back to the heart. Roads and blood vessels are similar in that smaller roads tend to connect to larger roads, just as smaller capillaries feed into larger veins. In addition, people use roads to travel to and from home, just as blood cells make their way back and forth from the heart.
3. If needed, quickly review how the circulatory system functions by having student pairs read the text on the “About the Circulatory System” poster. Encourage students to add information to the “What Am I?” chart papers if they haven’t already, and answer any questions they may have.
4. Explain that because blood vessels and roads have so many similarities, students will be making a GPS map and directions for a red blood cell. Ask students if they have ever seen phones “say” directions for people while they are driving. Explain that this means they’ve seen someone use a GPS! GPS stands for Global Positioning System. It is a space-based navigation system owned by the United States government and operated by the United States Air Force. (Go [here](#) if you’d to share information with your students about how GPS works.)
5. Turn back to the projected Google Maps and click on the blue “directions” arrow in the top left corner. Type in two locations in your community and show students the list of directions that appear. Compare the accompanying map to the directions to show how one complements the other. Make sure students understand that a GPS states these step-by-step directions to help someone get from Point A to Point B. If possible, use a smart phone to show students how the directions pop up one step at a time.
6. Then, break students into groups of three or four. Provide each group with a large piece of paper and drawing materials, and give them the following task:

Today, your group will be creating a GPS map and directions for a red blood cell as it travels throughout the human body. Your red blood cell must begin at the heart and end at the heart. Your group will decide where it will travel in between. To complete this task, you must:

1. Write clear step-by-step directions for the red blood cell, making sure to:
  - state the route it will take.
  - explain landmarks it will pass. (*Note:* Depending on where the blood vessel travels, students may need to use the internet to research organs that it will pass.)
  - incorporate how it will help at least one other body system (muscular, respiratory, digestive, etc.) along the way.
2. Illustrate this route. Students may break the route up into smaller illustrated sections, or they may illustrate the entire map.

Students can present their directions once they are completed. As student teams present, the rest of the class should be on “backseat driver” duty for missed roads, landmarks or systems in need of help to ensure that the red blood cell returns home successfully.

### **Activity 2: Invest in Your Heart**

*In this activity, students will use a carousel strategy to brainstorm what they have learned about the circulatory system. They then will work in groups to design a new technology that will help their peers be active and stay heart-healthy. As groups present their concepts, the rest of the class will pose as potential investors. Each student will ultimately have to decide which new product(s) are worth the investment.*

#### **Materials:**

- Chart paper titled: Circulatory system jobs
- Chart paper titled: Ways to be active
- Chart paper titled: Benefits of physical activity
- Chart paper titled: How does physical activity affect the circulatory system?
- One copy of the planning guide (see attached) for each group
- Blank paper
- Markers
- Pencils

1. Place the labeled chart paper around the room, and assign groups of students to each one. For two minutes, encourage the groups to brainstorm and record as many answers as possible. Student groups should then rotate around the classroom, taking one minute to read the responses and an additional two minutes to write new ones. Have students continue in this carousel fashion until four rotations are complete.
2. As a class, look at each completed chart paper and hold a short discussion. Can any answers be added? Are any answers incorrect?
3. Explain that, because the connection between health and physical activity is so strong, many technologies have already been invented that help promote physical activity and healthy hearts. As a class, create a t-chart with one side labeled “Heart-Healthy Technologies” and one side labeled: “What does it do?” Work together to brainstorm a list of as many ideas as possible. Ideas include wearable devices and apps for your phone that track steps, physical activity, sleep as well as other health-related data.
4. Once your list is complete, invite students to identify patterns or common features that more than one technology shares. Then, tell your students that they are now in charge of creating a NEW technology that can help their peers stay heart-healthy. Not only will they be in charge of designing this new product, but they also must try to convince a room full of “investors” that their idea is worth investing in so their product can become a reality!

Though students won’t have to actually build the technology, they will have to create a sketch or model of their product. Their product must:

1. be an entirely new product and NOT a modification of a product currently on the market.
  2. encourage physical activity that helps the circulatory system.
  3. be targeted toward students their age.
5. Divide students into new groups of three or four, and distribute the planning guide, which is designed to walk students through the entire activity. (Note: Students may also use the chart paper ideas around the room to jumpstart their brainstorming.)
  6. Once students have an idea in place, there is an additional challenge. The “inventors” do not have enough money to actually produce their product. This is where the rest of the class comes in. Every student group will be responsible for preparing a two-minute presentation for their classmates. These classmates will be posing as potential “investors” – i.e. individuals with money to spend, who may choose to provide the funds needed for their project.

It is therefore up to the student groups to be persuasive and convince their audience that it is their device that best meets the three criteria described above. In return, “investors” must ask questions following each presentation to assess the viability of the invention. The presenters must be prepared to answer tough questions and defend their product. Sample questions could include:

- How does your design promote heart health?
- Why do you think your design would appeal to the target age group?
- How does your design work?
- How would you make money with this design?
- How is this design different from or better than current products on the market?

7. Depending on your class personality, a class vote could be held after each presentation to see who would choose to invest in the product. Alternatively, each student could be given a set amount of investment dollars, so students have to think more critically about where their money will be spent and make a decision at the end of the presentations.

### **Correlating Standards**

National Physical Education Standards/Standard 2 - The physically literate individual recognizes the value of physical activity for health, enjoyment, challenge, self-expression and/or social interaction.

Health Education Standards/Standard 1 - Students will comprehend concepts related to health promotion and disease prevention to enhance health.

Next Generation Science Standards (NGSS)/LS1.A - Structure and Function: In multicellular organisms, the body is a system of multiple interacting subsystems. These subsystems are groups of cells that work together to form tissues and organs that are specialized for particular body functions.

### Common Core State Standards

RI.6.8 – Integrate information presented in different media or various formats (e.g. visually, quantitatively) as well as in words to develop a coherent understanding of a topic or issue.

W.6.1 – Write arguments to support claims with clear reasons and relevant evidence

SL.6.1.C – Pose and respond to specific questions with elaboration and detail by making comments that contribute to the topic, text or issue under consideration

### **Are You Ready to Take the Challenge?**

If you are looking for additional resources to extend the learning from this virtual experience, visit the [NFL PLAY 60 Challenge](http://www.nflplay60challenge.org) website and download resources to use in your classroom and conduct a 4-week physical activity challenge for your students.

Also, invite your students’ parents to check out the great videos and family activities to reinforce what students are learning in your classroom.

Visit <http://www.aha-nflplay60challenge.org> and don’t forget to encourage your students to get at least 60 minutes of physical activity every day!

## Invest in Your Heart Planning Guide

Directions: You are in charge of creating a new technology that will encourage your peers to be heart-healthy. Follow the steps below to brainstorm a product, create a presentation, and prepare to convince investors to turn your idea into a reality.

1. With your group, brainstorm ideas that *could* meet the following criteria:
  - Be an entirely new product and NOT a modification of a product on the market
  - Encourage physical activity that helps the circulatory system
  - Be something your peers would want to use
2. Narrow down your list to two product ideas, and create rough sketches of both ideas.
3. Look back at the criteria in #1 and select the idea that BEST meets all three. Create a draft of a two-minute speech to investors that explains:
  - Your product's name
  - What your product does
  - How it functions
  - How it meets each of the three criteria
  - Why they should invest in your product
4. Create a final drawing of your product on a large piece of paper, and prepare a final version of your presentation. Decide who will say each part.
5. Rehearse, rehearse, rehearse!
6. If you have time, imagine what questions may be asked of your team and develop persuasive answers.