

## **FRIED: TEACHER GUIDE**

**Subject:** Life Science

**Grade Level:** Middle School

**Last Updated:** June 1, 2008

### **Case Summary**

Bob loves his fried foods, and refuses to eat anything just for the health benefit. He lands in the hospital after strange pains in his left arm and his chest. Could Bob's high-fat diet have anything to do with him being in the hospital?

### **Credits**

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### **Learning Objectives**

At the end of the case students should be able to:

1. Explain mechanical and enzymatic modes of digestion.
2. Describe the flow of blood through the heart and through the body.
3. Explain how the circulatory system provides oxygen to the entire body.
4. Describe the food pyramid and use it to analyze a diet.
5. Identify and explain the functions of blood.
6. Explain how regular exercise is beneficial to overall and circulatory health.
7. Explain how the nutrients from food are utilized by the cells of the body.
8. Explain how the different components of food get into the body and subsequently to cells.
9. Identify the risk factors and symptoms of a heart attack.
10. Explain blood pressure and hypertension.
11. Define plaque, blood clot, and arteriosclerosis.
12. Identify and explain measures that should be taken to reduce the risk of heart attack.

### **Georgia Performance Standards**

*SCSh1.* Students will evaluate the importance of curiosity, honesty, openness, and skepticism in science. (NSES Content Standard A)

*S7CS7.* Students will question scientific claims and arguments effectively. (NSES Content Standard A)

*S7L2.* Students will describe the structure and function of cells, tissues, organs, and organ systems. (NSES Content Standard C)

- a. Explain that cells take in nutrients in order to grow and divide and to make needed materials.
- b. Relate cell structures (cell membrane, nucleus, cytoplasm, chloroplasts, mitochondria) to basic cell functions.

- c. Explain that cells are organized into tissues, tissues into organs, organs into systems, and systems into organisms.
- d. Explain that tissues, organs, and organ systems serve the needs cells have for oxygen, food, and waste removal.
- e. Explain the purpose of the major organ systems in the human body (i.e., digestion, respiration, reproduction, circulation, excretion, movement, control, and coordination, and for protection from disease).

### Assessment

Students are given a webquest activity that investigates aspects of the digestive system, the circulatory system and the food pyramid (included in the **Student Materials**). The final project is a poster that answers the following questions:

1. Heart and Circulatory System
  - a. How does blood flow through the circulatory system?
  - b. What are the functions of blood?
  - c. What is the coronary artery?
  - d. What benefits are there to exercising? Especially concerning the heart? Other benefits?
  - e. How long and how often should one exercise?
2. Portion sizes and food pyramid
  - a. What is the food pyramid?
  - b. What are correct portion sizes—show examples
  - c. How does the digestive system work?
  - d. What are food labels and how do you read them?
  - e. Name all the food groups
  - f. Why are fruits and veggies important for health?
  - g. Name 5 fruits and veggies and name their specific benefits
3. What is a heart attack?
  - a. What are the risk factors for a heart attack?
  - b. What are the symptoms?
  - c. What is blood pressure and hypertension?
  - d. What is a plaque?
  - e. What is a blood clot?
  - f. How does cholesterol affect blood?
  - g. What is arteriosclerosis?
  - h. What are some strategies to reduce the chances of a heart attack?

A grading rubric for the poster is included with the **Student Materials**.

### Implementation Strategy

Below is a suggested implementation strategy, based on 90-minute class periods:

#### Day 1

Read Scene 1	10 min
Data/Questions/Learning Issues	15 min

Research/Group Discussion	20 min
Read Scene 2	10 min
Data/Questions/Learning Issues	15 min
Research/Group Discussion	20 min

Day 2

Read Scene 3	10 min
Data/Questions/Learning Issues	15 min
Research/Group Discussion	20 min
Read Scene 4	10 min
Data/Questions/Learning Issues	15 min
Research/Group Discussion	20 min

Day 3

Read Scene 5	10 min
Data/Questions/Learning Issues	15 min
Research/Group Discussion	20 min
Read Scene 6	10 min
Data/Questions/Learning Issues	15 min
Research/Group Discussion	20 min

Day 4

Webquest and work on group project

Day 5

Finish group project, if needed

**Facilitator Guide:**

## Day 1

1. What are nutrients? What are the different types of nutrients?
2. What are the correct serving sizes (proportions) of foods to eat? How many serving sizes of eggs did Bob have? How many serving sizes of veggies did he have? How many servings of fruit? How many servings of meat? How many servings of desserts (sweets and fats)? Etc.
3. What is the food pyramid and what are the foods and portions of foods represented?
4. What are the symptoms of a heart attack?
5. What can be done to save someone who is having a heart attack?
6. What are the risk factors of a heart attack?

**Scene 1**

<b>FACTS</b>	<b>HYPOTHESES</b>	<b>LEARNING ISSUES</b>
Bob's typical diet	He doesn't eat healthy	What is a healthy diet?
The doctor said it was important to get the right nutrients	He doesn't get the right nutrients	What are nutrients?--general and specific (ei: names and functions of specific vitamins)
The doctor said it was important to eat the right proportions	He doesn't get eat the right portions	What are the correct proportions/serving sizes?
Eating healthy seems to be very important for your health	Bob is out of shape	What is the food pyramid?
Bob's typical diet	Bob doesn't eat healthy and this affects your health	What impact does nutrition have on health?
Bob doesn't know what a healthy diet is		What is wrong with Bob's diet?
Eating healthy may have to do with the food pyramid		What are the components of his diet?
Bob doesn't like healthy foods		How do fatty foods affect your body?
		What foods are bad for your immune system?

## Scene 2

FACTS	HYPOTHESES	LEARNING ISSUES	
Bob's symptoms: unusual pain in left arm, shortness of breath, cold sweat, collapsed, unconscious		What is wrong with Bob?	
Bob's symptoms: unusual pain in left arm, shortness of breath, cold sweat, collapsed, unconscious	Bob is having a heart attack	What are the symptoms of a heart attack?	
	Jimmy may call emergency	How can you save someone who is having a heart attack?	Will Jimmy do anything?
	Bob had risk factors of a heart attack	What are the risk factors of a heart attack?	
		What are the risks of dying of a heart attack?	
		How does the circulatory system work ? In a heart attack?	
		How does the respiratory system work?	
	Bob has the risk factors of heartburn	What is heartburn and symptoms and risk factors?	
		How does the digestive system work and specifically in heartburn?	
	Bob has the risk factors of a stroke	What is a stroke and the symptoms and risk factors?	
	Bob has the risk factors of panic attack	What is a panic attack and the symptoms and risk factors?	

**Day 2**

1. What measurements can you take to see if you are at risk for a heart attack? What are normal readings of these measurements and what are risky measures? Analyze Bob's stats and tell what is normal, what is risky for a heart attack, etc.
2. The different types of fat and cholesterol: which are good, which should we stay away from, what are they?
3. What health benefits do we get from exercise? How much do we need?
4. How can you prevent a heart attack?
5. How do you read a food label and its components?

**Scene 4**

<b>FACTS</b>	<b>HYPOTHESES</b>	<b>LEARNING ISSUES</b>	<b>QUESTIONS</b>
The doctor took tests to find out what was wrong		What measurements can you take to determine if you are at risk for a heart attack?	

**Scene 5**

<b>FACTS</b>	<b>HYPOTHESES</b>	<b>LEARNING ISSUES</b>	<b>QUESTIONS</b>
Fat is not bad, but some types. Need to watch Bob's cholesterol levels		What is fat and cholesterol?	
		What are the types of fat?	
		Are all fats bad?	
All his stats		Does Bob have the risk factors for having a heart attack?	
		What are bad stats?	
		What is diabetes?	
		What is HDL and LDL?	
		What is BMI?	
		Is getting a heart attack genetic?	
		Who is more likely to have a heart attack--men or women?	
Bob doesn't exercise	Exercise may be helpful in preventing certain diseases	What role does exercise play in maintaining health?	

	Exercise may be helpful in preventing certain diseases	What is enough exercise?
Bob's sample food label		How do you read a food label?
Everyone should have a healthy diet to improve quality of life	We can find some ways lower our risk of a heart attack	How can you prevent a heart attack?

## Resources

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