



Heart Attack Case: A Middle School Nutrition Project

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ABSTRACT

Health and nutrition education are vitally important, particularly because of the growing problems that our nation is facing with health and nutrition-related diseases. Educating and training at an early age can prevent many health problems such as obesity, diabetes, metabolic syndrome and many others. We created a heart attack case to introduce middle school students to the knowledge of nutrition and how nutrition affects the body. The case begins with a family man whose diet is not ideal or nutritious and exercise habits are poor. He begins to suffer symptoms of a heart attack and eventually has a heart attack. As the drama unfolds, the students begin asking and answering questions about heart attacks, healthy diets, the controversial food pyramid, correct portion sizes, food labels, the health impact of fruits and vegetables, exercise and its health benefits, the digestive system and circulatory system interaction, and the symptoms and preventions of heart disease. At the end of the case, as a way to evaluate the student's understanding and knowledge of the topic, a poster session will be held and each student will create a poster that answers one of these three questions: *What is a heart attack? What are healthy food choices? or How do the heart and the circulatory system function? As an additional way of evaluating the student's grasp of the topic, an "open poster" written test will be given to test their knowledge of their posters as well as the other students' posters.*

SUMMARY OF THE CASE

DAY 1

Day 1 is composed of two scenes. Bob is the father who eats poorly and has been warned about his health. Sandra, his wife, encourages him to start eating healthier. Jimmy, the high school son is introduced as well. In scene two, Bob has unusual pain in his left arm, notices he is short of breath, and breaks out in a cold sweat, as he goes to pick Jimmy up from track practice. Jimmy notices something is wrong with his dad as Bob grasps his chest and collapses.

DAY 2

Day 2 is composed of three scenes. Jimmy calls 911, and an ambulance comes and takes Bob to the hospital. They find out that Bob suffered a heart attack. The doctor comes in and talks to them about how Bob and the family need to make a lifestyle change in order to be healthier. Bob's health statistics are posted and a nutrition label is posted so the students will be able to analyze both.

DAY 3

Day 3 is composed of one final scene. The doctor tells the family about the posters that the middle school students are presenting, and suggests to look at the posters to learn more about living a healthy lifestyle. The final project is mapped out for the students in this final scene.

CASE OBJECTIVES

To sharpen skills on how to research and how to present research findings to a group of peers

To learn the digestive and circulatory system organs and their functions

To learn what specific statistics on the body indicate good or poor health

HOW WE ACCOMPLISHED

Students were given a more directed type of research
 ~Specific research tools were given
 ~Specific instructions were given on how to present the research to

~Students were given a webquest (see Student Handouts) to delve into these systems
 ~Learning issues gave rise to investigating these systems

Students were given Bob's health statistics, a food label (see Student Handouts), and diet information to analyze, research and make inferences about how they affect health and body functions

GEORGIA OCC's*

(4.0) Selects and uses multiple types of print and nonprint sources for information on science concepts

(7.1) Explains and describes the features and functions of the various organ systems.

(7.2) Describes and investigates body functions and make inferences regarding these functions

* Georgia (QCC's): Quality Core Curriculum

STUDENT HANDOUTS

Learning issues Checklist

- List website or book or source used
- Answer question thoroughly
- Write research summary in complete sentences
- Write 1/2 page to 1 page for each learning issue
- Be ready to hand in on following Monday
 - If not turned in on due date, grade will be affected
 - If you won't be here Monday, you must find someone else in your group to turn your learning issue in for you

Learning Issues from Day 1

- What are nutrients? What are the different types of nutrients?
<http://www.4girls.gov/eat/vitamins.htm>
<http://www.linksnorth.com/nutrition/nutrients.html> (more detailed—give it a try!)
 textbook: pages 656-659
- 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.
http://kidshealth.org/kid/stay_healthy/food/pyramid.html
<http://www.niddk.nih.gov/health/nutrit/pubs/winteen/index.htm>
<http://www.4girls.gov/eat/serving.htm>
 textbook: pgs 660-662
- What is the food pyramid and what are the foods and portions of foods represented?
<http://www.niddk.nih.gov/health/nutrit/pubs/winteen/index.htm>
http://kidshealth.org/kid/stay_healthy/food/pyramid.html
<http://www.4girls.gov/eat/index.htm>
<http://www.nutritionexplorations.org/kids/nutrition-pyramid.asp>
 textbook: pgs 660-662
- What are the symptoms of a heart attack?
<http://www.fcmsdocs.org/PublicHealthInfo/heartattack.html>
<http://rover.nhlbi.nih.gov/actintime/haws/haws.htm>
- What can be done to save someone who is having a heart attack?
<http://www.fcmsdocs.org/PublicHealthInfo/heartattack.html>
- What are the risk factors of a heart attack?
<http://familydoctor.org/x1953.xml>
<http://rover.nhlbi.nih.gov/actintime/aha/who.htm>
 textbook: pg 553 (not much info – recommend websites)

FINAL PROJECT

1. Heart and Circulatory System

How does blood flow through the circulatory system? What are the functions of blood? What is the coronary artery? What benefits are there to exercising? Especially concerning the heart? Other benefits? How long and how often should one exercise?

2. Portion sizes and food pyramid

What is the food pyramid? What are correct portion sizes—show examples? How does the digestive system work? What are food labels and how do you read them? Name all the food groups. Why are fruits and veggies important for health? Name 5 fruits and veggies and name their specific benefits

3. What is a heart attack?

What are the risk factors for a heart attack? What are the symptoms? What is blood pressure and hypertension? What is a plaque? What is a blood clot? How does cholesterol affect blood? What is arteriosclerosis? What are some strategies to reduce the chances of a heart attack?

Sample questions from a Webquest

Digestive System

<http://www.intellichealth.com/IH/rltH/WSIH000/23722/24311.html>

- What does two things does saliva do to foods that enter our mouths?

Click on "Follow the Flow of Food" and answer the following questions

- What are the functions of the liver and gallbladder and how do they work together?

http://www.kidshealth.org/teen/diseases_conditions/body_basics/digestive_system.html

- What do the nutrients in food give to the body's cells?

Circulatory System

<http://www.pbs.org/wgbh/nova/heart/heartmap.html>

- What part of the heart does the oxygen-poor blood flow to?



Draw a picture of the heart and label these parts: right and left atria, right and left ventricle, aorta, inferior and superior vena cava

<http://www.nutritionexplorations.org/kids/nutrition-pyramid.asp>

Your Diet: Draw the food pyramid

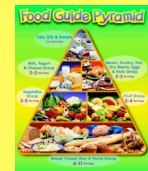


Indicate each kind of food you had for dinner last night and tell which category in the food pyramid it falls into

Analyze Bob's diet. What important things are low or missing? What is he eating in excess?

LESSONS LEARNED

- Organization is critical for PBL to have its full affect
- Prepare facilitator guides that include expectations we have for the students, several possible data, hypotheses, questions and learning issues the students may come up with
- Write out learning issues on paper for students
- Give students some sources to help them search for their learning issues—middle school students may need more guidance than other ages
- Post expectations and go over them thoroughly with students
- Self and group evaluations help students to stay on task
- Groups of 4 or 5 are great in middle school
- Each group and each student is different



Bob's statistics

Weight: 225lbs
 Height: 6' 0"
 BMI: 30.6
 Cholesterol: 230 mg/dL
 LDL: 195 mg/dL
 HDL: 35 mg/dL

Age: 43 years
 Sex: Male
 Blood pressure: 140/90 mm Hg
 Diabetes mellitus : NO
 Smoker: NO
 Family history: Bob sr., Bob's dad died of a heart attack at age 60.
 Exercise: NONE

Nutrition Facts

Serving Size Wendy's Large Fries 5.6 oz (156g)

Servings Per Container About 1

Amount Per Serving	
Calories	470
Calories from Fat	190
% Daily Value	
Total Fat 20g	31%
Saturated Fat 5g	25%
Polyunsaturated Fat 4g	
Monounsaturated Fat 11g	
Trans Fat 7g	
Cholesterol 0mg	0%
Sodium 150mg	1%
Total Carbohydrate 61g	20%
Dietary fiber 6g	24%
Sugars 0g	
Protein 6g	
Vitamin A 0%	Calcium 3%
Iron 7%	Vitamin C 15%

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