**Shorted**

**(The first generation with a shorter life expectancy than their parents.)**

**Introduction**

The American Obesity Epidemic may be the greatest public health challenge facing America. The current generation of adolescents is likely to be the first to have a shorter life expectancy than their parents. Recent statistics point out that, 2 out of 3 North Carolina adults are overweight or obese. Similar, startling statistics apply to younger generations, as well. Through this Problem Based Learning unit students will use data from the CDC (Center for Disease Control) to analyze changes in average, American BMI (Body Mass Index) since 1970. After coming to an understanding that significant changes have occurred in the average weight of the nation since 1970 students will explore many of the factors that have contributed to the dramatic shift. In addition, students will research the health consequences of being overweight or obese. Ultimately, students will produce a strategy for reducing the risk of obesity. Using the media of their choice, they will produce a product that expresses or explains the strategy. Each team of students must ensure that their strategy product is interacted with by at least 400 people.

In this project, much of the learning responsibility is placed on the student. The driving question is open ended enough that several answers and perspectives are possible. Students will be expected to conduct independent research and create a project that is unique and covers the topic thoroughly. Most of the classroom sessions are structured around viewing *Weight of the Nation* from HBO, reading articles, discussing and debating, and conducting hands-on activities.

**Driving Question**

Why might your generation have a shorter life than your parents’ generation?

**Essential Questions**

* What factors contribute to a shortened life expectancy?
* How has average, American Body Mass Index (BMI) changed since 1970?
* What lifestyle changes have contributed to the increase in average BMI?
* How have politics contributed to changes in American BMI?
* How has culture impacted average BMI?
* What effect does the school environment have on bodyweight?
* What are the health effects of carrying extra weight?
* What are some healthy strategies for reducing bodyweight?
* How can you educate 200 people about a strategy for a healthier life?

**Learning Outcomes**

* Students will analyze CDC data to understand that the average, American Body Mass Index has increased significantly since 1970.
* Students will come to a holistic understanding of the American Obesity Epidemic. Meaning that they will be able to identify, understand, discuss, and debate the social, economic, and political forces that have contributed to the epidemic.
* Students will be able to link excess bodyweight to the deterioration of health and further extend that understanding to the connection with a shortened life expectancy. Ultimately students will understand that carrying excess bodyweight puts undue stress on all body systems.
* Students will discuss the connection between the school environment and their health. Students spend most of their waking hours at school. They should recognize that the culture and policies of their school have a significant impact on their health.
* Using their accumulated knowledge, students will create a strategy for reducing the risk of obesity. Their strategy will be presented in an educational product that will be used to inform the public about the causes of obesity, the health effects of obesity, and a strategy for reducing the risk of obesity. The product must be interacted with by at least 200 people.

**Curriculum Alignment**

Health Education – High School

1. 9.PCH.1 Analyze wellness, disease prevention, and recognition of symptoms.
   1. 9.PCH.1.1 Recognize that individuals have some control over risks for communicable and chronic diseases.
   2. 9.PCH.1.4 Design strategies for reducing risks for chronic diseases
   3. 9.PCH.1.7 Differentiate between the lifelong effects of positive and negative health behaviors
2. 9.NPA.3 Analyze the relationship of nutrition, fitness, and healthy weight management to the prevention of diseases such as diabetes, obesity, cardiovascular diseases, and eating disorders.
   1. 9.NPA.3.1 Differentiate between healthy and unhealthy plans for weight gain, maintenance and loss

Occupational Course of Study – Applied Science

1. OA7.1 – Understand the human body’s basic needs and control systems.
   1. OA7.1.2 - Identify normal or desirable ranges for common health indicators (temperature, blood pressure, weight, cholesterol and blood glucose levels).

Social Studies Elective – Sociology

1. 12.C.5 Analyze the changing nature of society and the collective responses to change.
   1. 12.C.5.2 Analyze social change in terms of the influences of technological and industrial development.
   2. 12.C.5.3 Analyze social change in terms of the influences of governmental policy and laws.
   3. 12.C.5.5 Analyze social change in terms of the influences of economic trends and choices.
   4. 12.C.5.6 Use sociological perspectives on societal change to predict social issues and problems.

**Classroom Time Required**

As written this lesson requires 19, 90 minute class periods

Many teachers will not have the luxury of spending 3-4 weeks on this unit. Therefore, it has been written in such a way that teachers can make modifications as needed to suit their particular time constraints. Some suggestions for modification include:

* Watching fewer episodes of *Weight of the Nation*. Each episode covers a particular topic, so teachers could select the episode that best fits the needs of their class.
* Provide fewer in-class days for students to work on the project.
* Removing the advertising debate.
* Cut the school assessment section down to one day.
* Cut the consequences section down to one day.

**Materials Needed**

**Art Supplies**

1. Pipe cleaners
2. Markers, colored pencils, crayons
3. Scissors
4. Glue
5. Butcher Paper
6. Old Magazines

**Readings** - The following readings could be provided electronically or printed out and given to students.

1. Wendt, Minh. U.S. Department of Agriculture, "ERS Report Summary." Last modified June 2011. Accessed February 15, 2013. www.ers.usda.gov.
2. Abrams, Lindsay. The Atlantic, "A Proud Day for School Vending Machine Bans." Last modified August, 13 2012. Accessed February 15, 2013. http://www.theatlantic.com/health/archive/2012/08/a-proud-day-for-school-vending-machine-bans/261072/
3. Fryar, Cheryl, ed. *NCHS Health and Stats*. Center for Disease Control, 2012. s.v. "Prevalence of Obesity Among Children and Adolescents: United States, Trends 1963-1965 Through 2009-2010."

**Videos** – All needed videos can be found free online. You will need access to YouTube.

1. "HBO Documentary Films: The Weight of the Nation Trailer." *Weight of the Nation*. Posted April 18 2012. HBO. Web, http://www.youtube.com/watch?v=\_wwwVOcOZOc.
2. "America's Growing Obesity Epidemic."*TheDailyConversation*. Centers for Disease Control. January 31 2012. Web, http://www.youtube.com/watch?v=qHHHC22dtfE.
3. "Challenges." *Weight of the Nation*. HBO. Web, http://theweightofthenation.hbo.com/films/main-films/Challenges.
4. "Junkfood Advertising Aimed at Kids." *Junk Food Ads*. October 10 2006. Web, http://www.youtube.com/watch?v=5Jlv1c-3JeM.
5. "Consequences." *Weight of the Nation*. HBO. Web, http://theweightofthenation.hbo.com/films/main-films/Consequences.

**Graphics** – Graphics can be displayed on a projector or printed.

1. U.S. Department of Health and Human Services, "Childhood Obesity: A Bigger Problem Than We think w/Infographic." Accessed February 15, 2013. http://www.prokarateshop.com/blog/childhood-obesity-a-bigger-problem-than-we-think-winfographic/.
2. Kite. "Lab207." Last modified 2012. Accessed February 15, 2013. http://thelabatcma.com/2012/08/fail/.

**Audio**

1. Elliott, Debbie. "Tackling Obesity Amid Poverty In A Mississippi County ." *Living Large: Obesity in America*. NPR. August 09 2011. Web, http://www.npr.org/2011/08/09/139238924/tackling-obesity-amid-poverty-in-a-mississippi-county.

**Handouts**

1. Project Guidelines
2. Project Rubric
3. Project Management Log
4. Presentation Rubric
5. Team Member Evaluation Rubric
6. Redesign the Gift Giving Experience
7. Collaborative Group Work Protocols
8. Project Organization Template
9. Bloom’s Taxonomy Question Stems

**Technology Resources**

To run this project you will need a projector and computers with Internet access. It is not essential that each student have his or her own computer. One or two computers per team should be sufficient.

**Pre-activities**

Before entering this unit, complete the following tasks.

1. Read through the lesson plan in its entirety.
2. Gather all needed materials.
3. If necessary talk with your tech people about access to YouTube.
4. Arrange your students such that they are seated in groups of 3 or 4.
5. Before each day’s lesson review the specified videos, graphics, and readings.

**Activities**

A complete agenda for each day can be found below. Where possible I have noted modifications, needed resources, or steps that can be skipped if pressed for time.

Notes:

1. The topic of obesity is one that may be sensitive for many of the students. Understand that education about the subject is the only way that it can be prevented. As you work through the unit don’t be afraid to be honest and forthcoming. It might be a good idea to let the school guidance counselor know what you will be talking about.
2. Before entering the unit it would be a good idea to discuss with students the sensitive nature of the coming unit and the need for respect in their dialogue over the coming weeks. Playing off that point, you might want to work with your class to develop a set of “classroom norms” for the coming discussion. Follow this process:
   1. Explain to students that a norm is an expectation for conduct during an interaction.
   2. Ask students to brainstorm lists of norms that might be useful when discussing sensitive topics.
   3. In small groups have students decide on 2-3 norms that they would like the class to adhere to during discussion.
   4. Allow the class to vote on the 2 norms they feel are most important.
   5. If students don’t include the following norms, add them in yourself.
      1. Equity of Voice: Everyone has the right to speak uninterrupted.
      2. Respect for all opinions.
3. Anytime students are working independently or in groups make sure that you are continually circulating through the room. You must show that you are just as engaged in the project as they are supposed to be. Also, let them know that your roll is to help and guide, not provide answers. You may want to brainstorm a list of questions to ask students before the lesson begins.
4. Nearly every lesson contains some sort of low-stakes writing assignment. Consider having students complete and submit these assignments via Edmodo or Google Docs.
5. Go over learning targets, essential questions, the calculation of the individual grades (Found on Day 16), and the final assessments before you begin the project.

**Day 1 – Entry Event**

Objectives

To introduce students to the American obesity epidemic.

To pique student interest in the driving question, “Why might your generation not live as long as your parents’ generation?”

To brainstorm factors that may contribute to the American obesity epidemic.

The purpose of day one is to give the students a brief introduction to the unit, project, and material. More than that, however, today is the day to get students excited about the coming weeks. It is imperative that you are excited about today. If you don’t get excited the students won’t get excited.

Lesson Progression

1. Before students enter the classroom write the driving question on the board, “Why might your generation not live as long as your parents’ generation?” As students enter the classroom, don’t provide them with any information or answer any questions. Go ahead and take roll and complete any needed administrative tasks before the beginning of class. Allow the students to just sit, consider, and talk to each other about the question. Don’t be alarmed if you start to hear a “healthy buzz” in the classroom.
2. Once you are ready to begin class, use the Think, Pair Share protocol to structure students’ discussion. During the Think stage, have students jot their thoughts down on a sheet of paper. During the Share phase accept any and all responses. Don’t indicate the topic to be discussed. The goal is to just get them talking.
3. After talking for a couple of minutes let the students know that you will be starting a new unit. The goal of the unit is to address the driving question. Tell them that they will be producing a strategy to address the problem and creating an educational piece that explains their strategy.
   1. Don’t worry about talking about the project too much at this point. The goal is to just get it in their head.
4. Ask the students if they would like to know the identity of the topic for the new unit. Show the trailer for *Weight of the Nation* (<http://www.youtube.com/watch?v=_wwwVOcOZOc>). Explain to the students that obesity is the topic of the new unit and that they will be watching parts of the documentary later on in the unit.
5. Tell the students that they will now do a “free write.” Ask them to write 8-10 sentences about their initial thoughts, questions, and personal connections to the American Obesity epidemic. Make it clear to the students that this is not a paper that will be graded. They are just noting their thoughts at the beginning of the unit. Allow the students 10-15 minutes to write. Stress to the students that they must write the whole time. Even if they pass 8-10 sentences and have time left they should keep writing.
6. Ask if anyone would be willing to share what he or she has written. Before asking ensure that the class is aware of the need for respect as others talk about their thoughts. Allow the students a few minutes to talk about their thoughts.
   1. At this point it might be useful to ask students to give a quick demonstration of what it looks like to show respect for others while they are talking.
7. Tell the students that you are going to show them a 1-minute clip about American obesity rates. Ask them to pay attention to trends and formulate questions about what is going on. Clip (<http://www.youtube.com/watch?v=qHHHC22dtfE>) Play the clip multiple times.
8. Ask the students to share any observations they have made and questions they developed.
9. Break the class into teams of 3 or 4. Give each team a blank sheet of butcher paper or poster board. Ask each team to brainstorm 3-4 ideas about factors that may be driving the American Obesity Epidemic and write their ideas on the poster board. Give the teams about 5 minutes.
10. After 5 minutes have the teams rotate to another poster board. Once at the new poster board they can add to or comment (respectfully) on the thoughts contained on that board. Continue until each team has been to each poster.
11. Conclude the class by discussing their ideas regarding contributing factors. As teams talk about what they wrote and saw as they circulated, post the ideas up on a piece of butcher paper or the white board. Put the ideas in a place where they can be later referenced (A Google Doc might be a good solution). Bring closure to the class by acknowledging the ideas of the students and commenting that they will be exploring the many contributing factors in the coming weeks.
12. Exit ticket: On a sticky note, students respond to the prompt, “Pick one idea/factor discussed today and explain how it relates to your life.” Be sure to collect the notes from the students and look them over to identify trends or misconceptions.

**Day 2 – What is Obesity**

Objectives

Students will understand and calculate Body Mass Index (BMI).

Students will produce a mathematical model of the average, American BMI since 1970.

Students will define and explain obesity as a medical condition.

Lesson Progression

1. Before students enter the classroom, write the following question on the board, “What is obesity?”
2. After taking roll and conducting basic administrative activities ask the students to spend 5 minutes writing a response to the question. Stress that there is not a “right” or “wrong” answer.
3. When students have finished writing, spend a few minutes discussing their responses. As you lead the discussion use probing questions such as:
   1. Can you tell me more about that?
   2. Why do you feel that way?
   3. Where does your definition come from?
   4. Does anyone have a personal connection they would like to share?
   5. How does this connect to what we talked about yesterday?
   6. Do you think that obesity is a medically defined condition?
4. Transition by telling the students that today they will be investigating the clinical definition of obesity and looking at trends in American weight over time.
5. Direct students to the “What is Obesity” section of the *Weight of the Nation* website (<http://theweightofthenation.hbo.com/themes/what-is-obesity>) ask them to begin gathering information that might help them understand the root of the problem that they are developing a strategy to address. For the next 20 minutes have them focus on developing 3-4 different definitions of obesity. As the students work, circulate through the room and make sure that they are focusing on facts and numbers rather than opinions. Also, try to make sure that they don’t spend too much time on the health consequences. At the moment we are just worried about defining obesity itself.
6. After students have had some time to work, bring them back together and use the Think, Pair, Share protocol to help students discuss and share their findings. As the class discusses, work to make sure that they understand that obesity and overweight are clinically defined as weight ranges that are above what is clinically accepted as healthy.
7. Transition by telling the students that you are going to spend some time investigating Body Mass Index and making a few calculations. Direct that students to BMI Calculator. Org (<http://www.bmicalculator.org/>). Ask the students to use the site to find 5 facts about BMI. Also, ask them to find the roster of a professional football team. Have the students use the information in the roster to calculate and compare the BMIs of an offensive lineman, linebacker, and wide receiver.
8. Once students have finished gathering data and comparing the BMIs, provide them with Table 1 on Pg. 5 of *Prevalence of Obesity Among Children and Adolescents*. Ask the students to graph
   1. Average obesity by year for Ages 2-19
   2. Two age ranges of their choice for boys
   3. Two age ranges of their choice for girls.

Allow the students to make the graph as they see fit. After graphs are complete make sure that students understand that the year should be placed on the x-axis and percent obese should be placed on the y-axis. After the students have finished their graph ask them to calculate how much the prevalence of obesity has increased per year since 1971. To make this calculation students will figure out the difference in obesity between the first and last data point and divide that number by the total number of years.

1. Once calculations have been made, ask students to make predictions about average obesity rates for the year 2025.
2. Conclude the class session by asking students to again spend a few minutes writing a response to the question that they were asked at the beginning of the day. “What is obesity?”

**Day 3 – Workday**

Objectives

Students will explain the purpose and components of their public education project.

Students will create a group work contract.

Students will begin working on their public education project.

Lesson Progression

1. Before students come to class, display the *Childhood Obesity* (<http://www.prokarateshop.com/blog/childhood-obesity-a-bigger-problem-than-we-think-winfographic/>) graphic on the board.
2. After conducting administrative duties, ask the students to connect what they see in the graphic to what they learned yesterday. There aren’t any “right” or “wrong” answers; you just want to get the students talking. After a few minutes of discussion transition to the work of the day.
3. Explain the details of the public education project to the students.
4. Direct the students to create a work contract for the project. I’ve found that student work contracts save many headaches as the project progresses. Consider using the Project Management Log A good student contract should accomplish and document the following:
   1. The large project broken into smaller components.
   2. Each of the smaller components broken into individual tasks
   3. An accounting of when each task will be completed (work with students to understand how to timeline their project so that it is done early.)
   4. A record of who will be responsible for completing each task
   5. The signature of each of the group members
5. After you get a contract from each group, make a copy for yourself and each member of the group.
6. Allow the students to spend the rest of the period working on their project. Provide them with the Project Organization Template to help them structure their work. Today they should be defining the questions that need to be answered, deciding what “angle” they will take, defining the form their public education piece will take, deciding on some components to be included, and strategizing about how they might approach getting their 200 views.

**Day 4 – Workday**

Objectives

Students will explain the purpose and components of their public education project.

Students will continue working on their public education project.

Lesson Progression

1. Before students come to class, write the following question on the board: “Is there a relationship between poverty and obesity?” After completing daily administrative duties ask the students to spend 5 minutes writing a response to the question.
2. When students have finished writing ask them to share their thoughts. Again, there are no “right” or “wrong” answers. There is a general correlation between lower income and higher rates of obesity, but for now just get the students thinking and talking about it. Try to prompt the discussion along with questions like:
   1. How does income affect your access to food?
   2. In your daily life, where are you more likely to see people that are overweight?
   3. Does this question raise larger questions about justice for all people?
3. After a few minutes of discussion play *Tackling Obesity Amid Poverty in Mississippi County* from NPR (<http://www.npr.org/2011/08/09/139238924/tackling-obesity-amid-poverty-in-a-mississippi-county>). Before playing the clip, ask students to consider the 4 questions contained in the “4 As” protocol while they listen to the piece.
4. Following the piece get the students to express their thoughts and make connections to the project that they are working on. Some helpful questions might be:
   1. What did you find interesting?
   2. What did you find shocking?
   3. Does this relate to your personal experience?
   4. How can we change this situation?
5. Give the students the remainder of the class period to work on their projects. At this early stage in the project it might be a good idea to get them to identify skills that they might need to learn in order to complete their project. Do they need to learn to build a website? Create a podcast? Create a twitter account? Learn about social marketing? Learn how to blog or vlog? Make sure that the students are taking the initiative to acquire the skills they need to be successful on the project. As students are working, circulate through the classroom to offer advice as needed and to redirect students who may be drifting off task.
   1. Idea: Students that are particularly good at a specific technological skill might be able to lead “mini-workshops” during the course of the project. Example: One day there could be 5 stations in the class. Each station represents a specific technology and is hosted by a student. The class would have the option of visiting stations that would provide the skills that they need to complete their project.
6. Before the conclusion of class, ask each group to come together to discuss and document the day’s progress. Each group should record on paper or electronically and turn in an account of who accomplished what before they leave for the day.

**Day 5 – Social Factors**

Objectives

Students will research, discuss, and debate changes in the American lifestyle over the last 60 years that may contribute to the Obesity epidemic.

Lesson Progression

1. Prior to class, make 4 butcher paper posters with the following headings:
   1. Physical Activity
   2. Interaction with friends
   3. Food and dining
   4. Media use
2. Before students enter the room, write the following question on the board: “How was your parent’s and grandparent’s childhood different from your own?”
3. After completing any needed administrative duties, ask the students to spend 5 minutes writing a response to the question.
4. When students have finished writing, inform them that today they will be looking at social factors that may be contributing to the obesity epidemic.
5. Provide students with an overview of the Carousel Brainstorming protocol.
6. Divide the students into 4 groups and send each group to a poster. Instruct the groups to discuss how the childhood of their parents and grandparents was different from their own in relation to the category listed on the paper. For example: How was the physical activity of their parents and grandparents different from their own? Ask the groups to write some major points from their discussion on the posters. After 5 minutes or so have the groups rotate to a new poster and repeat the process. At each poster groups may comment on the writings of the other groups or add their own individual thoughts.
7. After each of the groups has visited each poster begin a class discussion of the trends by asking the students if they noticed any trends in the posters as they circulated through. As students call out or talk about trends that they noticed, write the trends on the board.
8. With the trends on the board, ask the students to form teams of 2 or 3 and get online and to look for articles, websites, and research that either supports or refutes a particular trend. Inform the class that in 15 minutes each group will be responsible for presenting their findings.
9. When teams have finished researching have them present their findings in 1 minute or less. Be sure that they mention their source. The idea isn’t so much confirmation or refutation of the trend. The idea is to have the class help each other identify useful resources.
10. To conclude class, provide students with a post-it note and ask them to write two sentences about how the work done today connects to the project that they are working on. Have students stick the post-its on the board as they leave.
11. After students have left, collect the post-its and check them for student understanding.

**Day 6 – Workday**

Objectives

Students will explain their initial strategy ideas and components of their public education project.

Students will continue working on their public education project.

Lesson Progression

1. Before students come to class, chose a portion of this graphic to display (<http://thelabatcma.com/2012/08/fail/>). Try to choose the part that will incite the strongest response from your students. After completing any administrative tasks break the students up into groups of 3 and ask them to use the Think, Pair, Share protocol to discuss their reaction to the graphic. After each group has had 5 minutes to discuss, ask them to share their discussion with the class. Some focusing questions that groups could use as a jumping off point might include:
   1. What do you find interesting?
   2. What do you find shocking?
   3. Which part of this most needs to be communicated to the public?
2. Spend a few minutes talking with the class about the content of their discussion and ask them how the graphic might connect to their project. Before releasing students to work on their project, inform them that at the end of the period each group will have to give a small account to the class of their progress so far. The questions that each group should answer include:
   1. What are you thinking about with regard to your strategy for addressing the problem?
   2. What product are you thinking about producing?
   3. How are you thinking about getting your views?
   4. What difficulties are you currently facing?
3. Give the students the remainder of the class period to work on their projects. As students are working, circulate through the classroom to offer advice as needed and to redirect students who may be drifting off task. It also might be a good idea to check in with each of the groups individually to see how they are doing.
4. When 10 or 15 minutes remain in the class period call the class together and ask groups to begin sharing their progress. It might be helpful if other groups are able to respond to each of the groups that is presenting.
   1. If time allows you may want to consider using the Gallery Walk protocol to give students time to receive feedback on their project.

**Day 7 – Social and Political Factors**

Objectives

Students will identify factors that have contributed to the American Obesity Epidemic.

Students will relate government policy to food availability.

Students will discuss ways in which the external environment affects the health of a community.

Lesson Progression

1. Before students enter the classroom, write the following question on the board. “What does it take to bring an apple to your plate and what does it take to bring a cheese burger to your plate?” Give the students time to consider the question while you conduct your administrative duties.
2. Explain to students that logically a cheeseburger should not be cheaper than an apple. Apples are simple. You plant a seed, wait for it to grow, keep the tree healthy, pick the apple, ship the apple. For a burger you must raise the cow, slaughter the cow, process the meat, make the cheese, make the bread, and grow the vegetables. Each of the components takes energy to produce and must be transported to the ultimate destination.
3. Ask the students to form teams of three. Have each team of three come up with ideas about why burgers are cheaper than apples. Make sure that they write down their thoughts. Also, have them develop questions that they would need to pursue to find an answer to this question.
   1. Providing students with a list of Bloom’s Revised Taxonomy question stems might help students develop both low and high level questions.
4. Once students have developed their questions, have the groups make sure that each member has a copy of the questions that they just developed. Inform the students that today they will be watching *Weight of the Nation – Challenges.* Ask them to gather the answers to the questions they developed as they watch the film. Also, ask them to write down any new questions that come up.
5. Play *Weight of the Nation – Challenges* (<http://theweightofthenation.hbo.com/films/main-films/Challenges>)
6. To conclude the class session, ask the students to write a 5 sentence response to the film.
7. As homework have students read *The Effects of Food and Beverage Prices on Children’s Weight*

**Day 8 – Advertising Debate**

Objectives

Students will research and debate the question, “Government should play a minimal role in regulating food advertisements to young children.”

Lesson Progression

1. Before students enter the classroom, write the following question on the board. “What is the role of government in creating rules about food advertisements targeted at young children?” While you have finished administrative duties, ask the students to spend 5 minutes writing a response to the question.
2. Ask students to call out commercials that specifically target kids with marketing for junk food. As they call out commercials, write them on the board.
3. Show *Junk Food Ads* (<http://www.youtube.com/watch?v=5Jlv1c-3JeM>) after viewing the clip, ask the students for their thoughts.
4. Divide the class into 4 teams. Two teams will be arguing the affirmative and two teams will be arguing the negative. Make sure that you divide up teams and assign their position before you reveal the question that will be up for debate.
5. Once the teams have been formed, write the statement on the board. “Government should play a minimal role in regulating food advertisements to young children.” Inform the students that this is the statement to be debated. Each team will prepare separately. Ultimately each team will choose two representatives to join with two representatives from the other team for the debate. During the debate the rest of the class will keep score using a debate rubric.
6. Before releasing the students to research, make it clear that all arguments should be based on actual facts. Encourage them to search for news articles and court cases related to the topic rather than opinion blogs. They need as much factual support as possible. Provide the teams with 20 minutes to prepare for the debate. The time is short, but the goal of the activity is not to provide them with in depth research on the subject, but to get them thinking about it.
7. Lay out the format for the debate on the board.
   1. Each group gets 1 minute to make an opening statement (affirmative first)
   2. Teams will have 10 minutes to debate. (Negative gets to ask the first question or make the first statement)
   3. Each group will have 1 minute to make a closing statement (Negative first)
8. After 20 minutes have the two representatives from each team meet to coordinate their arguments and plan their strategy. Give them 5 minutes to prepare.
9. Before beginning the debate familiarize the audience with the debate rubric and assign half the class to grade the affirmative team and half the class to grade the negative team. At the end of the debate each audience member will provide a graded rubric for their team and a statement of which team they think won.
10. Before beginning the debate go over the format and stress the fact that you will moderate the debate. As the debate progresses you must be diligent about keeping a tight time clock (use a timer) and ensuring that only one person is speaking at a time. The best practice would be to have debaters raise their hand and wait to be recognized before speaking.
11. At the end of the debate have the audience tally up their score. If time allows, ask the students for their thoughts on the debate and figure out the winning team. If there is not time, announce the winning team tomorrow.

NOTE: If you have concerns about trying the debate with your class, consider having students find a junk food ad and redesign it to be truthful. (Ex. (If you were teaching about the health effects of smoking) A Newport cigarette ad that stated “ALIVE WITH PLEASURE” and showed two couples throwing a football around could be re-drawn to show four skeletons tossing around a football and it said “DEAD WITH CANCER”.) Students could take junk food ads and research the ingredient lists and health effects to include in their “truthful” food ad.

**Day 9 – Workday**

Objectives

Students will evaluate the progress of their projects.

Students will continue working on the public education projects.

Lesson Progression

1. Before students enter the room, write the following question on the board. “Did yesterday’s debate effect your thinking about food advertising aimed at young people? If so, why? If not, explain why?” After completing administrative duties, ask the students to spend 5 minutes writing a response to the question.
2. Ask the students for their thoughts on yesterday’s debate. Some helpful questions might be.
   1. What did you learn?
   2. What was surprising?
   3. Which team do you think won and why?
   4. Should manufacturers be allowed to target children?
   5. How do you think that your exposure to advertising has shaped the way you eat?
3. Ask the students to get together with their project teams. Before each team starts working have them decide what tasks they would like to accomplish during class that day and write them down. Also, let groups know that you will be coming around to meet with them individually to check on project progress.
4. As groups work, circulate through the room and meet with each group. When you meet with the groups do your best to gauge how their project is coming. Some good questions to ask might be.
   1. Can you show me what you have accomplished?
   2. What are your biggest challenges?
   3. Are you working together well as a team?
   4. Is everyone pulling their own weight?
   5. What help do you need from me?
   6. Are you adhering to your project contract?
5. About 10 minutes before the end of the class session, have each team look at the list of things they hoped to accomplish, make notes about what they did or didn’t accomplish, and turn the sheet in to you.

**Day 10 – School Environment**

Objectives

Students will learn the steps of the engineering process.

Students will identify conditions in their school that affect the wellness of the student body.

Lesson Progression

1. Before students enter the classroom, write the following question on the board. “Does the school environment make you more or less healthy?” While conducting administrative duties ask the students to spend 5 minutes writing a response to the question.
2. Ask students to share their thoughts. Don’t worry too much about digging into the issue at this point. You are just trying to get a conversation going.
3. Inform students that over the next couple of days they will be proposing solutions to a health challenge in their school. First, however, they need to learn a little about thinking and the engineering process.
4. Students will engage in redesigning the gift giving experience.
   1. Ask students if anyone has ever had difficulties choosing or giving a gift to another person.
   2. Tell students that design thinking is a series of steps used to approach and solve a problem.
   3. Tell students that they will be learning about design thinking by redesigning the gift giving experience for a partner.
   4. Hand out the Redesigning the Gift Giving Experience templates.
   5. Interview: Each students spends 3 minutes interviewing their partner about the gift giving experience.
      1. Prompt students to ask questions such as:
         1. What do you like about gift giving?
         2. What don’t you like about gift giving?
         3. How do you feel when you give a gift?
         4. How do you feel when you are choosing a gift for someone?
         5. Do you remember a gift giving experience going poorly?
   6. Dig Deeper: Each student chooses a topic or idea revealed in the first interview that they would like to explore more deeply. This interview should focus on one specific problem that was revealed in the first interview.
      1. Prompt students to ask questions such as:
         1. Tell me more about that situation.
         2. How did that make you feel?
         3. Can you explain in a little more detail?
   7. Capture Findings: Students spend 3 min. working individually to respond to the questions contained in this portion of the template.
   8. Define problem statement: Students use the information recorded in the “Capture Findings” section as material to define the problem.
      1. Exp: “Mary needs a way to make her younger brother feel special. Unexpectedly, in her worldview, Mary feels that everyone should feel like a prince/princess for one day per year.
   9. Ideate: Students will individually write their problem statement at the top of the box then spend 5 minutes sketching out as many solutions to the problem as they can come up with. Stress to the students that at this point practicality is not an issue. Encourage them to think outside the box and get down whatever they think of. Also, encourage the students to use drawings rather than words.
   10. Share Solutions and Get Feedback: Partners share their solutions and provide feedback. Students may need help with this section.
       1. Encourage them to let their partner talk through all options before they provide feedback.
       2. Encourage students to identify one idea that they like more than the others and to respectfully recommend that one of the ideas be removed from the list.
       3. Help students provide constructive feedback by asking them to use statements such as:
          1. I like this one, but \_\_\_\_\_\_.
          2. You could change \_\_\_\_\_\_\_\_\_ which would improve the concept by \_\_\_\_\_\_\_\_\_\_\_.
          3. The elements of this idea that I like are \_\_\_\_\_\_\_\_\_.
          4. The elements of this idea that I don’t like are \_\_\_\_\_\_\_\_\_\_\_\_\_\_.
          5. You could combine \_\_\_\_\_\_ from idea X and \_\_\_\_\_\_\_\_\_\_\_ from idea Y.
   11. Iterate: Students reflect on the feedback that they have just received, choose the best idea, make necessary changes, and generate a new solution.
   12. Build Your Solution: Provide students with pipe cleaners, construction paper, scissors, glue, markers, etc. and ask them to build a model of the solution that they just generated.
   13. Share and Receive Feedback: Students share their model with their partner and receive feedback based on the four questions posed on the design worksheet.
5. Following the activity ask students to speak a little bit about what they learned about problem solving through the activity. Some good questions for generating discussion might include.
   1. What did you learn from this activity?
   2. Do you already use parts of this process to solve problems in everyday life?
   3. Do you think this process could be applied to any situation?
6. Following the activity, break the students up into teams of 3. Inform them that they are now going to work on the elements and define (Steps 1-4) portion of the process. Each team is responsible for identifying at least 3 elements of the school environment that pose the biggest threat to the wellness of the student body. Give the students 5-10 minutes to talk about it. Once each group has decided on their list, ask them to prioritize the last and write the top 3 challenges on the board. Either keep the challenges on the board for tomorrow or have someone/write them down/take a picture so that you will have them tomorrow.

**Day 11 – School Environment**

Objectives

Students will identify the component of their school environment that has the greatest impact on their health.

Students will use the design process to develop a prototype solution to that problem.

Lesson Progression

1. Before students enter the room, write the problems that they identified yesterday on the board. Don’t worry about evaluating or condensing the statements. Put them up just as they were.
2. While conducting administrative duties, direct the students to start looking for trends or commonalities between the responses they developed yesterday. Ultimately you are trying to condense the list down to 3 major problems. Questions that might be useful in this process include:
   1. What common themes do you see?
   2. Do any of these statements say the same thing using different words?
   3. Do you think we can eliminate any of these statements?
   4. Which three do you think are most important?
   5. Can we clarify any of these statements?
3. With the three challenges visible on the board, conduct a class vote on which of the topics the class should pursue. It would probably be a good idea to have the students write their selection on a sheet of paper or conduct some sort of electronic ballot (If computers are available have students respond using <http://socrative.com>). You don’t want some students influencing the choices of the others.
4. Ask students to create a clear “problem statement” that clarifies their choice.
   1. Exp. There are not any healthy food choices in the cafeteria. Consequently, the student body is more likely to make unhealthy food choices.
5. Now that the challenge has been defined, ask students to use the HFLI engineering protocol (below) to develop a solution. For the feedback phases of the process have the students either pair up with another group, or even better, bring in administrators or other teachers to offer input on their ideas.
   1. Empathize (Complete)
   2. Define (Complete)
   3. Ideate – unrestricted brainstorming to generate as many ideas as possible.
   4. Prototype – Students move from brainstorming to developing a concrete idea.
   5. Feedback – Students get feedback on their idea from another team or an administrator.
   6. Reflect – Students reflect on the feedback received.
   7. Refine – Students use feedback to refine their idea.
6. After each team has developed a solution, give the teams 1 minute each to “pitch” their solution to the class. If possible, the best-case scenario would be for the groups to pitch their ideas to an administrator.
7. To conclude class, ask the students to vote on which idea they thought was the best in terms of creativity and feasibility.
8. As homework have students read *A Proud Day for School Vending Machine Bans* ([http://www.theatlantic.com/health/archive/2012/08/a-proud-day-for-school-vending-machine-bans/261072/#](http://www.theatlantic.com/health/archive/2012/08/a-proud-day-for-school-vending-machine-bans/261072/))

**Day 12 - Workday**

Objectives

Students will discuss vending machine bans in schools.

Students will evaluate their own participation in the project.

Students will continue working on the public education projects.

Lesson Progression

1. Before students enter the room, write the following question on the board. “Do snack vending machines have a place in the school?” While completing administrative duties, ask the students to spend 5 minutes writing a response to the question.
2. Use the Think, Pair, Share protocol to discuss students’ thoughts on the topic of vending machine bans. Some questions that might be useful in getting discussion going during the Share section might include:
   1. Should vending machines be banned?
   2. Is access to snack foods a right?
   3. Are freedoms being taken away?
   4. Should adolescents have the same access to snacks as adults?
   5. Can adolescents be trusted to make healthy choice with regard to vending machines?
3. Have students complete a group member evaluation rubric for themselves. The purpose of the rubric is to help students assess their own contribution to the successes of the team. When students have finished, collect the rubrics. When you have a chance look them over to see if there are any glaring issues that you feel you need to address. Also, if it seems that a student has not represented their contribution accurately you may want to approach the student and have a conversation about how you see their participative versus how they see their participation.
4. Ask the students to get together with their project teams. Before each team starts working have them decide what tasks they would like to accomplish during class that day and write them down.
5. Give the students the remainder of the class session to work on their projects. As they are working circulate through the room to offer help as needed.
6. About 10 minutes before the end of the class session, have each team look at the list of things they hoped to accomplish, make notes about what they did or didn’t accomplish, and turn the sheet in to you.

**Day 13 – Consequences**

Students will understand the health consequences of overweight and obesity.

Students will discuss how excess bodyweight contributes to health problems.

Lesson Progression

1. Before the students enter the room, write the following question on the board. “Are there health consequences of being overweight?”
2. Ask the students to spend 5 minutes writing a response to the question.
3. Tell the students that today they will watch first installment of *Weight of the Nation* titled *Consequences (*[*http://theweightofthenation.hbo.com/films/main-films/Consequences*](http://theweightofthenation.hbo.com/films/main-films/Consequences)*).* As they watch the film ask them to consider the driving question for the unit, “Why might your generation not live as long as your parents’ generation?” Also, ask them to take graphic notes as they watch the film. Rather than taking traditional notes have them make a little drawing or sketch every time they see or hear something surprising or interesting. The sketch is to just serve as a reminder to them of their thought.
   1. You also might want to consider asking them to pay attention to the questions posed in the “4 As” protocol.
4. *Save the Last Word for Me* discussion protocol
   1. Ask the students to write a 1-sentence response to the question, “Why might your generation not live as long as your parents’ generation?”
   2. Divide the class intro groups of 3-4.
   3. 1 student shares their 1-sentence response to the question.
   4. The other students spend 2 minutes responding to the statement by explaining why they think that the student chose to make that particular statement.
   5. The first student explains why the other students were right or wrong and provides their rationale for making the statement.
   6. Discussion rotates until each student in the group has shared their statement and received feedback.
5. To conclude class, give each student a post-it note. Instruct them to write their takeaway from the day’s class session and post their note on the board as they leave.
6. Once students are gone read through their notes to see if they have a firm understanding that the obesity epidemic is the reason that they may not live as long as their parents.

**Day 14 - Consequences**

Objectives

Students will explore the consequences of overweight and obesity on specific body systems.

Students will brief the class of the effects of overweight and obesity on a particular body system.

Lesson Progression

1. Before students enter the classroom write the following question on the board: “Which body system does extra bodyweight impact most?” After completing administrative duties ask students to write 5 sentences in response to the question.
2. After students have finished writing ask them to share their responses with the class. As students offer their opinions ask them to provide rationale to support their statements.
3. Inform the students that today they will be conducting an in-depth investigation of the impacts of overweight and obesity on one particular organ system. Also let the students know that they will present their findings to the class at the end of class.
4. Ask students to list body systems that they think might be impacted by overweight and obesity. As students mention body systems write them on the board. Make sure that the following systems make it on the board.
   1. Skeletal
   2. Cardiovascular
   3. Nervous
   4. Digestive
5. Divide the class into teams of 3. Assign each team a different body system. In bigger classes it is not a problem if multiple classes are working on the same system.
6. Ask students to spend 30 minutes researching the effects of overweight and obesity on their assigned body system and putting together a short presentation. Let students know that they will be presenting their findings at the end of the class session. Encourage students to take a risk and put together something like a quick Prezi or PowerPoint presentation.
7. A general Google search using the term “effects of obesity on body systems” turns up good results. If students search for “effects of obesity on \_\_\_\_\_\_\_\_\_\_ system” they should also find a good deal of information. Below are some resources that students might find useful.
   1. <http://theweightofthenation.hbo.com/themes/what-is-obesity>
   2. <http://www.cdc.gov/obesity/adult/causes/index.html>
   3. <http://www.ncbi.nlm.nih.gov/pubmed/19242242>
   4. <http://www.acsh.org/news/newsID.1747/news_detail.asp>
   5. <http://www.majoreasy3.org/consequences.html>
   6. <http://www.mydr.com.au/nutrition-weight/animation-effects-of-obesity>
8. As students are working circulate through the classroom and help as needed. Also, be sure to keep a timer running so that you can provide students with periodic time checks. Give students a 5 minute warning before presentations are to begin.
9. Each group should give a brief presentation on the effects of excess weight on their particular body system. As groups are presenting encourage the students to take graphic notes (rather than writing down every word, draw a picture to remind them of a thought they had while they were listening).
10. To conclude class, ask students to write 5-10 students about what they have learned about the consequences of excess bodyweight on health. Take the time to read through student responses so that you can address misconceptions as needed.

**Day 15 - Solutions**

Objectives

Students will research strategies for maintaining a healthy bodyweight.

Students will create a data-based plan for losing 10 pounds and keeping it off.

Lesson Progression

1. Before students enter the classroom, write the following question on the board: “What methods do people use to try to lose weight?” After conducting administrative duties ask students to respond to the question. As students respond, write their responses on the board.
2. Next ask students to list strategies for weight loss that they would consider safe. Also write these suggestions on the board.
3. Following the creation of this list work with students to create a Know/Need to know list about what it takes to loose and keep off 10 pounds. On the know list should be information that they already know to be true. As students are listing items make sure that anything put in the “know” column is verified as being true. The “Need to know” column should be filled with questions that should be pursued in the effort to identify a healthy strategy for loosing and keeping off 10 pounds. Some questions that should end up in the “Need to Know” category should include:
   1. How many calories are in 1 lb. of fat?
   2. How much exercise is needed to burn 1 lb. of fat?
   3. How many calories are specific foods worth?
   4. Are there foods that are worth a high number of calories AND would be easy to cut?
4. Divide students into groups of 3. Assign each group the task of creating a plan to lose 10 lbs. in a safe and healthy manner. For this exercise surgery is not an option. Encourage students to craft plans that focus on simple and sustainable lifestyle changes. Make it clear to students that their proposed plan must be backed up with actual research and should include a timeline for how long it would take to lose 10 lbs. At the end of class students will present their plans in 2 minutes or less.
5. Some resources that might aid students in their research include:
   1. <http://theweightofthenation.hbo.com/themes/what-is-obesity>
   2. <http://theweightofthenation.hbo.com/themes/weight-loss>
   3. <http://www.mayoclinic.com/health/exercise/SM00109/>
   4. <http://www.calorieking.com/foods/>
   5. <http://allabouthealthwellness.blogspot.com/2011/01/how-many-calories-equal-one-pound-of.html>
6. When 30 or so minutes remain in class ask groups to begin presenting their strategies. Try to get the students to keep their presentations short and to the point.
7. If time remains ask the students to discuss what commonalities their heard between the strategies presented.
8. To conclude class ask students to write a couple of sentences about what it takes to loose and keep off 10 pounds. Check the students exit tickets to make sure that they understand that the process is slow and should be based on the simple math of calories in versus calories out.

**Day 16 – Final Work Day**

Objectives

Students will complete their public education projects.

Students will prepare to present their public education projects.

Students will complete group member evaluation rubrics.

Lesson Progression

1. Before students enter the room, write the following question on the board: “What do you still need to complete?” After finishing administrative duties ask students to spend a few minutes writing a response to the question on the board.
2. Before releasing students to work on their projects complete the following tasks:
   1. Go over the project and presentation rubrics with the students. Be sure that they are clear on how their projects will be graded.
   2. Let students know that the project is not complete and that they will not receive their grade until they can prove that their piece has received 200 views. Consider setting a deadline 3 weeks away. If students have not reached their view quota by then they will receive a grade reduction of 5% for every week that they surpass the deadline.
   3. Go over the team member evaluation rubric with the students. Make it abundantly clear that the rubric will be used as part of the grade that each of their team members receive. As such, they must ensure that they fill out the evaluation accurately and fairly.
      1. This will be a bit tedious, but when grading the final project for each student proceed as follows”
         1. Use the project rubric to calculate the group grade for the public education piece.
         2. Use the presentation rubric to calculate the group grade for the presentation.
         3. Average the scores received on the team member evaluation rubric.
            1. Example
            2. Team member 1 gave a score of 25/30 or 83%
            3. Team member 2 gave a score of 29/30 or 97%
            4. Team member being evaluated receives an average score of 27/30 or 90%
         4. Add together the scores received on the project and presentation rubrics.
         5. Multiply by the percentage received on the evaluation.
            1. Example
            2. Group score on the project and presentation is 87/100 or 87%
            3. Group member received 90% on the evaluation
            4. 87 X .90 = 78%
            5. Therefore the individual group member receives a 78% on the project.
3. Give students the remainder of class to work on their projects. Stress the importance of practicing their presentations. While students are working circulate through the room and offer help as needed.

**Day 17 – Presentations**

Objective

Students will present their public education pieces.

Lesson Progression

1. Before class begins, write the following question on the board: “How should I respond while a classmate is giving a presentation?” After completing administrative duties, ask the students to spend a few minutes writing a response to the question.
2. Discuss the importance of respecting fellow classmates while they are giving their presentations.
3. Allow students 10 minutes to make final preparations. During this time it is important to make sure all students get presentations, videos, etc. loaded on laptops so that they can just plug in and go when it is their turn to present.
4. While students are presenting have a timer and a presentation rubric at hand. As students present, make notes on their presentation and fill out the rubric. Try to provide students with praises and constructive criticisms that go beyond the checkboxes of the rubric.

**Day 18 - Presentations**

Objective

Students will present their public education pieces.

Lesson Progression

1. Before class begins, write the following question on the board: “What did you take away from yesterday’s presentations?” After completing administrative duties, ask the students to spend a few minutes writing a response to the question.
2. Spend 5 minutes discussing their responses.
3. Allow students 10 minutes to make final presentations. Ask students that have already presented to be respectful of those preparing by not distracting them while they are getting ready.
4. While students are presenting have a timer and a presentation rubric at hand. As students present make notes on their presentation and fill out the rubric. Try to provide students with praises and constructive criticisms that go beyond the checkboxes of the rubric.

**Day 19 – Summary**

Objective

Students will summarize what they have learned during their time working on the obesity project.

Lesson Progression

1. Before students enter the room, write the following question on the board: “What have you learned during this unit?” While finishing administrative duties, ask the students to write a 10-sentence response to this question.
2. When students have finished writing spend some time discussing what they have learned. Some questions that might be helpful in getting discussion going could include:
   1. Have your views changed? If so, how?
   2. Do you plan to make any lifestyle changes as a result of this unit?
   3. Have you shared anything you learned with your family?
   4. What is the most important thing you will take away from this unit?
3. Following discussion have the students form groups.
4. Provide each group with butcher paper, markers, scissors, glue, magazines, etc. Ask each group to create a poster representing what they have learned during the unit. When students have finished creating their posters, ask them to share with the class.
5. Exit: Before leaving class ask students to rate the unit on a scale of 1-5 with 1 being terrible and 5 being life changing.

**Assessment**

Formative Assessment:

Throughout the course of the unit students will be completing regular low-stakes writing assignments. When completing an exit ticket for the day students are asked to reflect on the concepts learned during that particular class session. At the end of each day be sure to take time to read through the exit tickets to uncover any misconceptions that the students might have. Also, the exit tickets will give you an idea as to whether the students truly grasped the material or not. Spend 5 minutes or so at the beginning of each days lesson addressing any issues identified through the previous day’s exit tickets.

At multiple points during the course of the unit students will be asked to evaluate their own contributions to the project and their overall participation on their team.

Summative Assessment:

The final summative assessment for this project is two-part:

Part 1: Strategy for reducing the risk of obesity as presented in the public education campaign product. This product is the campaign piece developed by the students for exhibition to the public. This product will identify students’ response to the driving question, understanding of factors that contribute to the problem identified, and effects of the problem identified on life expectancy. The campaign product will be scored according to the Public Education Campaign rubric.

Part 2: Final Presentation: The final presentation will provide further insight into students understanding of the driving question and the factors that contribute to a shortened life expectancy. Students’ final presentations will be evaluated according to the Shorted Presentation rubric.

**Alternative Assessment**

Rather than requiring that 400 individuals interact with students’ products, you might consider convening a panel of experts to hear the students’ presentations. The panel of experts could include teachers, parents, local business people, local politicians, school officials, doctors, hospital personnel, and other students. The panel could be asked to hear the presentations, judge them based on feasibility and effectiveness, and choose the presentation that they feel best addresses the question.

**Supplemental Information**

**Many of the following resources are included in the above plan, though some are not. You may find many of these resources useful when preparing for and presenting this unit.**

*A Light Lunch (Case Study Lesson Plan)* [*http://sciencecases.lib.buffalo.edu/cs/collection/detail.asp?case\_id=460&id=460*](http://sciencecases.lib.buffalo.edu/cs/collection/detail.asp?case_id=460&id=460)

*A Makeover for Food Labels -* [*http://well.blogs.nytimes.com/2009/12/07/a-makeover-for-food-labels/*](http://well.blogs.nytimes.com/2009/12/07/a-makeover-for-food-labels/)

*Adult Obesity Facts -* [*http://www.cdc.gov/obesity/data/adult.html*](http://www.cdc.gov/obesity/data/adult.html)

*All You Need to Know About BMI (Infographic) -* [*http://visualoop.tumblr.com/post/6620167862/all-you-need-to-know-about-bmi*](http://visualoop.tumblr.com/post/6620167862/all-you-need-to-know-about-bmi)

*Are TV and Video Games Making Kids Fat?* [*http://www.slate.com/articles/health\_and\_science/medical\_examiner/2012/04/are\_video\_games\_making\_kids\_fat\_screen\_time\_and\_childhood\_obesity\_.html*](http://www.slate.com/articles/health_and_science/medical_examiner/2012/04/are_video_games_making_kids_fat_screen_time_and_childhood_obesity_.html)

*Health, Nutrition, and Fitness from A-Z (New York Times Learning Blog Resources) -* [*http://learning.blogs.nytimes.com/health-nutrition-and-fitness-from-a-to-z/*](http://learning.blogs.nytimes.com/health-nutrition-and-fitness-from-a-to-z/)

*Infographics in Anti-Obesity Campaigns -* [*http://infographics-inspiration.blogspot.com/2011/02/infographics-in-anti-obesity-campaign.html*](http://infographics-inspiration.blogspot.com/2011/02/infographics-in-anti-obesity-campaign.html)

*Living Large in America (NPR Special Feature) -* [*http://www.npr.org/series/136462878/living-large-obesity-in-america*](http://www.npr.org/series/136462878/living-large-obesity-in-america)

*National Center for Health Statistics -* [*http://www.cdc.gov/nchs/*](http://www.cdc.gov/nchs/)

*No Quick Fix: Developing Problem Solving Skills (Redesigning the Lunch Line Lesson) -* [*http://learning.blogs.nytimes.com/2010/10/25/no-quick-fix-developing-problem-solving-skills/*](http://learning.blogs.nytimes.com/2010/10/25/no-quick-fix-developing-problem-solving-skills/)

*Obesity in the U.S.: American Life Expectancy Falling Dramatically* [*http://www.good.is/posts/obesity-in-the-u-s-american-life-expectancy-falling-dramatically/*](http://www.good.is/posts/obesity-in-the-u-s-american-life-expectancy-falling-dramatically/)

*Preventable Deaths Infographic -* [*http://www.termlifeinsurance.org/preventable-deaths-diseases/*](http://www.termlifeinsurance.org/preventable-deaths-diseases/)

*Surprise! Subsidizing Healthy Food Helps Kids Lose Weight* (<http://www.good.is/post/surprise-subsidizing-healthy-food-helps-kids-lose-weight/>)

*The Childhood Obesity Epidemic (Infographic) -* [*http://mat.usc.edu/national-school-lunch-week-2011-infographic/*](http://mat.usc.edu/national-school-lunch-week-2011-infographic/)

*What does America’s Fat Future Look Like? (Infographic) -* [*http://visualoop.tumblr.com/post/21147964916/what-does-americas-fat-future-look-like*](http://visualoop.tumblr.com/post/21147964916/what-does-americas-fat-future-look-like)

**Critical Vocabulary**

**Atherosclerosis:** A disease of the arteries characterized by the deposition of plaques of fatty material on their inner walls.

**Body Mass Index (BMI):** A weight-to-height ratio, calculated by dividing one's weight in kilograms by the square of one's height in meters and used as an indicator of obesity and underweight

**Cardiovascular:** Of or relating to the heart and blood vessels

**Diabetes Melitus:** A disorder of carbohydrate metabolism, usually occurring in genetically predisposed individuals, characterized by inadequate production or utilization of insulin and resulting in excessive amounts of glucose in the blood and urine, excessive thirst, weight loss, and in some cases progressive destruction of small blood vessels leading to such complications as infections and gangrene of the limbs or blindness.

**Epidemic:** A widespread occurrence of a disease in a community at a particular time.

**High Blood Pressure:** a common disorder in which blood pressure remains abnormally high (a reading of 140/90 mm Hg or greater).

**Legislation:** The act of making or enacting laws.

**Lobbying:** Seek to influence (a politician or public official) on an issue.

**Obese:** Overweight and obesity are both labels for ranges of weight that are greater than what is generally considered healthy for a given height. An adult who has a BMI of 30 or higher is considered obese.

**Overweight:** Overweight and obesity are both labels for ranges of weight that are greater than what is generally considered healthy for a given height. An adult who has a BMI between 25 and 29.9 is considered overweight.

**Sleep Apnea:** Sleep apnea is a potentially serious sleep disorder in which breathing repeatedly stops and starts.

**Stroke:** A stroke is the sudden death of brain cells in a localized area due to inadequate blood flow.

**Subsidies:** A sum of money granted by the government or a public body to assist an industry or business so that the price of a commodity or service may remain low or competitive.

**Comments**

This unit was developed in the style of project-based learning. A project-based learning format removes the teacher from the front of the classroom and places significant responsibility for learning on the shoulders of the student. This lesson has been structured in such a way that all topics that students will need to interact with are presented throughout the course of the unit. The students, however, will not be provided with many specific answers. It is the responsibility of the student to use resources given, as well as, outside research to produce an answer to the driving question. Answers to the driving question will vary and it is possible that they will not include obesity. If an answer does not address the issue of obesity, but still meets the requirements of the project, it is acceptable. As you work your way through this unit resist the urge to lead students in one direction or another. Rather try to serve as a guide that provides resources, advice, and feedback.

**Author Biography**

My name is Vance Kite. Currently I am in my fifth year of challenging young minds as a science teacher. For the last two years I have had the pleasure of serving as a part of the faculty at City of Medicine academy in Durham, NC. City of Medicine Academy is a public (Durham Public Schools) magnet program for students wishing to pursue a career in the health sciences. Through the course of my teaching career I’ve had the opportunity to teach courses as diverse as Marine Science is from Public Health. In a typical school year I will teach Earth and Environmental Science, AP Biology, AP Environmental Science, and Topics in Public Health. I’ve had the opportunity to serve on multiple teams tasked with creating innovative STEM courses, just published a lesson with ed.ted.com, and was nominated CMA’s 2013 Teacher of the Year. In the spring of 2012 I was awarded one of 44 Kenan Fellowships for curriculum development in the area of project-based learning. This unit was made possible through that fellowship.