You Are What You Eat

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Overview

Have you ever thought about how much food you and your family consume in an entire week? We all have the same 168 hours in a week, but how many of those hours do we use to buy, prepare our food, and eat our food? Diets are a huge part of our lives. Some of us put much thought into what our meals consist of, while others consume what is available to us. Our unit will begin with the students keeping a food diary for one week. We will use this diary to fuel a variety of activities linked to our current eating habits, as well as a baseline for a comparison at the end of our unit.

As a part of our study, the students will take a nutritional survey. The survey will ask questions regarding food habits in their home, such as, how often do you and your family sit down to a meal together? Or, who does the food shopping in your family? Are you a part of food shopping, or preparation. This will allow us to better get to know each other, as well as recognize the strengths and weaknesses in our nutritional approach.

An excellent resource that our professor shared with us is the book *What the World Eats* by Faith D'Aluisio and Peter Menzel. We will use this book to explore how eating habits around the world differ, yet overlap in many ways. So many of our students have such a narrow view of the world, often never setting food outside of Philadelphia. This cultural experience of looking into the way the rest of the world eats will be an eye opening experience to them.

We will incorporate our knowledge of cell structure by discussing how the foods we consume provide the nutrients to fuel our cell processes. We will explore the influence in and connection to specific parts of the cell—for example, giving off a

reddish color and being associated with those darker meats is attributable to their numerous mitochondria. In looking at a chicken cell, we will witness first hand what a large cell looks like and defining the function of the cell membrane, the nucleus and cytoplasm. Looking at the cell in relation to its function in the overall body, we'll conduct a digestive system lab in which the students follow the track of their food from consumption to waste removal.

Through demonstrations such as an energy content lab, students will reflect on how their body "burns" through certain types of food. We will use a potato chip and a low fat Chex particle. The speed at which each of these foods burns directly reflects how much energy they have. This demonstration will ignite an exploration on the energy of foods, and the types of energy certain foods give us.

We'll discuss the idea of the supermarket, and the designer's pristine calculations on what foods to place in the front of the store versus the foods that are placed in the back of the store. In the world of nutrition, and specifically in the sales of food, movements such as these are calculated and engineered in a way that can benefit the business.

The idea of genetically modified foods is a hot topic right now, but it is not a new topic. If you think about it, through the idea of natural selection, we have been genetically modifying foods for years now. Many of our students have no idea where our food comes from. Through the viewing of documentaries such as *Food, Inc.*, and the exploration of genetically modified foods, the students will explore the source of their foods and come to their own conclusion of what types of foods they'll want to buy.

Throughout the unit, students will be required to obtain a weekly current event that pertains to nutrition in some way. We will incorporate these articles into our research and knowledge base of how food plays an important role in the daily function of our bodies.

After all of our exploration and research has been completed the students will work on a culminating project to plan a week long menu that is healthy and benefits our bodies. There will be specific guidelines for caloric intake, the percentage of calories that make up key elements and specific vitamin requirements. To extend even further, the students will be given a budget and will use circulars to plan their weekly shopping trip.

Rationale

Often times, children's nutrition are dictated by foods that are purchased for them. They eat the food that is kept in the house, served during lunch at school, and prepared for dinner in the home at night. When students have the opportunity to purchase their own foods, they'll choose the foods that taste good and completely ignore nutritional value. At some point, students will be responsible for buying and preparing their own foods. I feel

compelled to equip them with the information necessary to make responsible nutritional decisions. Many students are lacking the proper fuel to energize them for a day of rigorous activity. If they knew the effect of food on their bodies, would they make better choices? If nutritional foods were provided to them as options, would they have the proper education to choose those foods?

The 7th grade Philadelphia School District science curriculum begins with a unit on Cells. This unit explores the structure and processes of the cell, as individuals and as a collective unit within our bodies as tissues, muscles, organs and organ systems. The specific parts of a cell and the function of each, as well as the processes of photosynthesis and cellular respiration are explored in depth. Linking this cell function to body growth, it is important to recognize that cells need to be growing in order for our body to be growing. This unit on cell function and nutrition will provide an extension and enrichment to this unit quite well.

All too often the students want to know how the information they are learning relates to their daily lives. In relating the cells unit to nutrition and the effect that food has on our bodies as a whole, I think the cells unit will come alive for students. Through various activities, demonstrations, reflection on diet, exposure to the various diets of cultures around the world, and current events involving nutrition, I hope to equip students with the tools they need to be nutritionally responsible.

Objectives

This 7th Grade Unit will be conducted during a daily 67 minute science class.

The student will be able to:

- Record a diary of food consumed in one week in order to analyze calorie consumption
- Complete a nutritional survey in order to recognize nutritional strengths and weaknesses
- Explore the book *What the World Eats* in order to compare the meals in different cultures
- Examine the cell and cell processes in order to determine how cells use food for fuel
- Compare the functions of each parts of the cell in order to recognize the specific job of each part
- Examine an egg in order to identify the parts of a cell
- Observe the energy of foods when burned in order to make better nutritional decisions
- Analyze the layout of a supermarket in order to recognize patterns and marketing strategies

- Examine and compare food labels in order to make informed nutritional decisions
- View the documentary *Food, Inc.* in order to compare organic farming with nonorganic farming
- Read various current events regarding nutrition in order to recognize how important nutrition is to our daily survival
- Plan a week long menu with specific dietary and budget guidelines in order to apply knowledge from the unit to real life

Strategies

The students will be given a worksheet in which they will record everything they eat for an entire week. The worksheet will simply be to record food consumption, and the analyzing will happen in class. Once students finish their diary for the week, we will record the amount of calories consumed each day, paying specific attention to the types of calories these foods were, using My Fitness Pal. The students will compare the amount of calories consumed to the daily allotted value for their age.

The nutritional survey will be introduced to the class as a way for us to get to know each other and our eating habits. The survey will include questions like, who does the cooking in your house? Who does the food shopping? How are you involved with the food shopping/preparation/clean up?

We'll look at the book *What the World Eats* and, in pairs, each will focus on a different country. We'll analyze the most typical foods eaten for breakfast, lunch and dinner. Comparing to our own diets, the students will share their findings with the class.

Piggybacking off our diagram of the cell project, the students will analyze the specific jobs of each of the parts of the cell, recognizing the effect of food consumption on each part. An egg cell will be viewed, in order for the students to recognize the parts that most cells have, up close and personal, with a large cell.

The students will view a demonstration while I burn a variety of snack foods, signifying maybe how fast or slow the body would burn through them as energy after consumption. The students will make observations in order to realize the effect of the food we put in our bodies. They will consume the foods and comment on how they think the foods will affect their energy levels.

We'll look at pictures of supermarkets, and even visit one if possible, recognizing the layout of the market and where specific things are placed for the consumer. Students will notice that in each and every supermarket, the fresh produce and vegetables are the first things seen. They will then recognize that milk is in the back of the store, and being an essential item that most people have to buy, will have to walk past multiple aisles to get

to it. Hopefully, this will cause them to pick up a few things along the way that they might not have intended to.

The students will bring in nutritional labels from the foods they consumed during that first week of diary completion, and we'll analyze the labels. We'll start with a mini lesson on how to read labels, and then view them from the context of what essential vitamins our bodies need, and the caloric intake specifically recommended for our age.

The documentary *Food, Inc.* will be viewed, for the purpose of showing students where our food could come from. It will open their eyes to see what goes on inside the chicken houses and on the wide open (or not so open) fields that pigs and cows are raised, for our consumption. They'll compare the horrible treatment of some animals to the more organic mindset and treatment of other animals in the film.

Current events will be brought in weekly, so we can analyze the public's view on nutrition and stay up to date with the hot topics being discussed by citizens of our area. This will allow students to be informed and keep up to date at the latest news regarding the foods we consume on a daily basis.

And finally, the students will use their knowledge of nutrition and cell processes to create a well-balanced week long menu that provides them with the proper nutrients, stays inside their daily allotted caloric intake and budget. The students will add advice to the meal plan on how to help stay within the budget and allotted calorie goal through their reading of current events.

Classroom Activities

Each lesson is intended for a 67 minute 7th grade Science class.

Lesson 1: Introduction to Unit: *You Are What You Eat!*

Objective(s):
Record a diary of food consumed in one week in order to analyze calorie consumption
Complete a nutritional survey in order to recognize nutritional strengths and weaknesses
Explore the book *What the World Eats* in order to compare the meals in different cultures

Materials: food consumption diary, nutritional survey

Procedure: Open with a grand discussion on basic food consumption. Ask students to write down what they have eaten that day. Pair share to compare your diets, and then come together for a large discussion to compare diets. How do you think your diet effects your energy level, or mood? Introduce the unit to students, piggybacking off our previous Cells unit. View the book *What the World Eats* and have students specifically focus on

each country. Have students begin to analyze the diets of their country, and make observations on the common food items consumed. Compare these items to their diets to recognize similarities and differences.

Assessment: Write a one page essay introducing the country in which you read about in *What the World Eats*. Describe what you observed about their eating habits. Compare their eating habits to yours. What was similar? What was different?

Lesson 2: What the World Eats

Objective(s):
Explore the book *What the World Eats* in order to compare the meals in different cultures
Present findings of various food consumptions
Examine the cell and cell processes in order to determine how cells use food for fuel
Compare the functions of each parts of the cell in order to recognize the specific job of each part

Materials: *What the World Eats* book, cell structure model

Procedure: Students will share their findings in their individual "research" regarding the country they read about in the book. What did you find interesting? How where their diets comparable to yours? Different than yours? Students will take notes as they listen to presentations.

Assessment: Of all of the cultures you heard about today, which would you most enjoy being a part of, in reflection of their diets? What would you miss from your diet? What would you easily give up from your diet?

Lesson 3: Cell Biology

Objective(s):
Examine the cell and cell processes in order to determine how cells use food for fuel
Compare the functions of each parts of the cell in order to recognize the specific job of each part

Materials: Egg, corn seed

Procedure: Students will view an egg, and observe the parts of a cell that are very prominent in an egg. Transition back to cell and cell processes to review the types of cells that we have, and the job that each does. Focus on the parts of the cell, and what parts of the cell influences the nutrition of what we are eating. Review the specific job parts of each cell and relate to nutrition. View the corn seed and talk about what sort of nutrients it contains, and how many calories it has. Relate this now back to the "What the World

Eats" lesson from yesterday, focusing on the presence of the egg, and then corn in various cultures. Where are these prominent? Scarce?

Assessment: Choose either the egg or corn kernel, and choose a country in which this food is either scarce or prevalent. Write an essay that describes the food's importance in the culture. How are these foods prepared in the various countries? Are they baked or fried? Why do you think this is? Conclude with how you think the country would be affected by the presence or absence of your type of cell.

Lesson 4: Supermarket Sweep

Objective(s):
Observe the energy of foods when burned in order to make better nutritional decisions
Analyze the layout of a supermarket in order to recognize patterns and marketing strategies
Examine and compare food labels in order to make informed nutritional decisions

Materials: wheat Chex, potato chip, flame, tweezers, beaker, pictures of supermarket, various food labels

Procedure: Show a wheat Chex and describe nutritional value. Show potato chip and describe nutritional value. Have students comment on the overall appeal, taste and greasiness of each, as observed or experienced in the past. Burn both objects, and have the students reflect on the length of time it took to burn each. Lead them to the conclusion that the potato chip burns faster because of the oil/fat. Conduct a conversation on how this is similarly the way your body processes foods. Provide students with pictures of supermarkets, or if possible, visit a local supermarket. Ask the students, what is the first thing that they see when they walk in? Take a survey to see what products the students think are the most frequently purchased, and take note where they are in the store. Provide students with various food labels. Explain and model how to read food label. Have students complete worksheet that asks about various parts of the food label.

Assessment: Design your own supermarket. What would you put right in the front for the customers to see upon walking into your establishment? What amenities would your supermarket have. What products would you carry? Which would you choose not to carry?

Lesson 5 & 6: How do I know what is right for me?

Objectives:
Research daily nutritional value in order to determine how many calories I should consume on a daily basis

Apply knowledge of daily nutritional value to determine which foods would be most beneficial when provided with options
View the documentary *Food, Inc.* in order to compare organic farming with nonorganic farming

Materials: daily allotted nutritional values for various ages, various food labels and fast food restaurant nutrition facts, *Food, Inc*.

Procedure: Students will research to determine what the appropriate amount of calories they should consume in a day is. They will then analyze various nutrition food labels and fast food nutrition facts to determine healthy choices. Students will begin to view the documentary *Food, Inc.* while completing a video guide.

Assessment: Write a letter to a character in the documentary. Would you want to congratulate them or confront them? Reflect on how they operate their farm. Would you operate yours the same or differently. And why?

Lesson 7: Current events

Objectives:
Read various current events regarding nutrition in order to recognize how important nutrition is to our daily survival

Materials: nutritional current events

Procedure: Students will find and review an article regarding nutrition in the news. Examples could include genetically modified foods, farming, bacteria breakouts, weightloss plans, etc. Students will share their article with the class.

Assessment: Article review and presentation

Lesson 8: Menu

Objectives:
Plan a week long menu with specific dietary and budget guidelines in order to apply knowledge from the unit to real life

Materials: Menu worksheet, supermarket flyers

Procedure: Students plan a week long menu of nutritional meals. They'll use online cookbooks to search for and record healthy meals that not only provide nutritional benefit, but stay in the confines of their daily allotted calorie values as well as budget.

Assessment: Menu plan, how well they were able to stick to calories and budget.

Annotated Bibliography/Works Cited/Resources

Amsel, Sheri. *The Everything KIDS' Human Body Book: All You Need to Know About Your Body Systems- From Head to Toe!* Adams Media, 2012. This book will be helpful when discussing the human body and how food digestion relates to our daily functioning.

D'Alusio, Faith. *What the World Eats.* Random House Distribution, 2008. This book will be useful in broadening the students' view of food, opening up their view to a more international perspective.

Jana, Laura. *Food Fights, 2nd Edition.* American Academy of Pediatrics, 2012. This book is useful in framing the challenges that our students face on a daily basis regarding their nutritional health.

KidsHealth. http://kidshealth.org/kid/htbw/digestive_system.html. *Your Digestive System.* This website is a useful visual tool.

Liakos, Connie. *How to Teach Nutrition to Kids, 4th Edition.* Carrot Press, 2012. This book is useful for language to use when communicating with the students regarding nutrition.

McKeith, Gillian. *You Are What You Eat: The Plan That Will Change Your Life.* Plume, 2006. This book will be useful background knowledge and will enrich understanding of nutritional to enhance your lectures and labs.

Muth, Natalie. *Eat your Vegetables and Other Mistakes Parents Make: Redifining How to Raise Healthy Eaters.* Healthy Learning, 2012. This book will be useful background knowledge and will enrich understanding of nutritional to enhance your lectures and labs.

Poethig, Scott. *University of Pennsylvania Teacher Institute Lectures.* 2014. Our lectures from the TIPS program have been extremely beneficial to my creation of this unit.

Ross, Catherine. *The Amazing Milk Book.* Addisson-Wesley, 1991. This book will enhance your discussion of milk, and allow for enhancement of lecture.

Shanley, Ellen. *Fueling the Teen Machine, 2nd Edition.* Bull Publishing, 2011. This book will allow you to create a framework of food as fuel.

Shield, Jodie. *Healthy Eating, Healthy Weight for Kids and Teens.* Academy of Nutrition and Dietetics, 2012. This book will serve as background knowledge to enhance lectures.

Appendix

Nutritional Diary

Name: _____Week of:_____

Directions: Record all food and drink consumed for this week (Mon-Fri). Include the brand, name of product, type of food and amount of food for each meal. Do not worry about recording calories, as we will be using MyFitness Pal for this process.

Monday Breakfast:

Food or Drink (include brand and name of item)	Amount consumed (cups, ounces, tablespoons, etc.)

Monday Lunch:

Food or drink (include brand and name of item)	Amount consumed (cups, ounces, tablespoons, etc.)

Monday Dinner

Food or drink (include brand and name of item)	Amount consumed (cups, ounces, tablespoons, etc.)

Monday Snacks

Food Or drink (include brand and name of item)	Amount consumed (cups, ounces, tablespoons, etc.)

Tuesday Breakfast:

Food Or drink (include brand and name of item)	Amount consumed (cups, ounces, tablespoons, etc.)

Tuesday Lunch:

Food Or drink (include brand and name of item)	Amount consumed (cups, ounces, tablespoons, etc.)

Tuesday Dinner

Food Or drink (include brand and name of item)	Amount consumed (cups, ounces, tablespoons, etc.)

Tuesday Snacks

Food Or drink (include brand and name of item)	Amount consumed (cups, ounces, tablespoons, etc.)

Wednesday Breakfast:

Food Or drink (include brand and name of item)	Amount consumed (cups, ounces, tablespoons, etc.)

Wednesday Lunch:

Food Or drink (include brand and name of item)	Amount consumed (cups, ounces, tablespoons, etc.)

Wednesday Dinner

Food Or drink (include brand and name of item)	Amount consumed (cups, ounces, tablespoons, etc.)

Wednesday Snacks

Food Or drink (include brand and name of item)	Amount consumed (cups, ounces, tablespoons, etc.)

Thursday Breakfast:

Food Or drink (include	Amount consumed (cups,

brand and name of item)	ounces, tablespoons, etc.)

Thursday Lunch:

Food Or drink (include brand and name of item)	Amount consumed (cups, ounces, tablespoons, etc.)

Thursday Dinner

Food Or drink (include brand and name of item)	Amount consumed (cups, ounces, tablespoons, etc.)

Thursday Snacks

Food Or drink (include brand and name of item)	Amount consumed (cups, ounces, tablespoons, etc.)

Friday Breakfast:

Food Or drink (include brand and name of item)	Amount consumed (cups, ounces, tablespoons, etc.)

Friday Lunch:

Food Or drink (include brand and name of item)	Amount consumed (cups, ounces, tablespoons, etc.)

Friday Dinner

Food Or drink (include brand and name of item)	Amount consumed (cups, ounces, tablespoons, etc.)

Friday Snacks

Food Or drink (include brand and name of item)	Amount consumed (cups, ounces, tablespoons, etc.)

Nutritional Survey

Name: _____ Date: _____

Directions: Please answer all questions in complete sentences.

1. Think back to the last time you sat down with your family to have a meal. Who was there? What did you eat? What time of day was it? When did this occur?

_____

_____

_____

2. Describe your favorite meal.

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3. Name some foods you dislike, and why.

_____

_____

_____

4. How many meals do you usually eat in a day?

Four or more **Three** **Two** **One** **None**

5. How often do you eat vegetables? Circle your answer

Never **Once a week** **2-3 times a week** **Daily** **2-3 times a day**

6. How often do you eat fruits?

Never **Once a week** **2-3 times a week** **Daily** **2-3 times a day**

7. How often do you snack on potato chips, cheese curls and candy?

Never **Once a week** **2-3 times a week** **Daily** **2-3 times a day**

8. How often do you drink soda?

Never **Once a week** **2-3 times a week** **Daily** **2-3 times a day**

Name: _____ Date: _____

Reflections on *Food, Inc*.

This week we watched *Food, Inc*., a documentary about where our food comes from. It was an eye opening experience for all of us! Answer the questions using complete sentences. I look forward to reading your responses.

1. What is your initial response to the movie? What are your thoughts/reactions?

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   _____

   _____

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2. If you had the chance to talk to one of the companies who forced their workers to house chickens in dark, crowded and unsanitary chicken coops, what would you say to them?

   _____

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3. What would you say to the organic farmer?

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4. What regulations do you think the USDA (US Department of Agriculture) should have for chicken farmers?

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5. Would you be interested in being a farmer? Why or why not? What kind of farmer would you be and why?

_____

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_____

6. Has this movie changed your thoughts about the food that you eat? How and why?

_____

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7. Food producers are lobbying in court as we speak to produce cloned animals for human consumption, and not labeling the packages. How do you feel about this? Give reasons for your feeling.

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8. Write a few paragraphs on the topic of food habits in your family. Who does the food shopping? Who does the cooking? How often does your family sit down together to eat a meal?

9. Use the next page to write a one page letter to one of the characters in the movie. Develop your ideas with an introduction, body and conclusion. Include the following information:
    - Introduction of yourself
    - Why you chose to write this character a letter
    - How you felt about what they said in the movie
    - How you could help them
    - What, if anything, you plan on doing in response to seeing the movie
    - Any questions you might have for them
    - Words of encouragement and/or ideas on how to farm "friendlier" towards the animals.
    - Conclusion

Dear _____,

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Sincerely,

Websites for Worksheets

- Parts of a cell worksheet: http://hilo.hawaii.edu/affiliates/prism/documents/pandacells.pdf
- Supermarket layout worksheet: http://blog.suny.edu/wp-content/uploads/2014/04/Supermarket-Layout.jpg
- Nutritional label comparison worksheet: http://www.nscsd.org/webpages/ahysick/files/nutrition%20label%20worksheet.pdf
- Menu planner worksheet: http://easyhealthrecipe.com/menu-planner/

Content Standards

Make statements about an observation and provide a reasonable explanation/guess what the outcome of an event will be. (SA.1.3.4)

Engage in various hands on activities in which the senses are used to collect information. (S8.A.1.1.2)

Compare passive transport with active transport. (S8.B.1.1.1)

Describe the parts of a cell. (S8.B.1.1.4)