

Web Unit Plan

Title: Food for Thought: *How can I stay healthy?*

Description: Students learn about and analyze student eating habits, understand healthy choices in nutrition, and research nutritious alternatives as they investigate and present ways to improve student nutrition.

At a Glance

Grade Level: 6–8

Subject sort (for Web site index): Science, Health, Mathematics

Subject(s): Health, Science, Mathematics

Topics: Nutrition, Health, Consumer Awareness, Persuasion, Business

Higher-Order Thinking Skills: Critical Analysis, Interpretation of Data

Key Learnings: Importance of Diet, Persuasive Writing, Planning Healthy Meals, Interpreting Food Labels

Time Needed: 3-4 weeks depending on amount of out-of-class work

Background: Based on a unit created by a teacher in South Carolina, United States

Unit Summary

Students analyze their own nutrition and then complete a project where they develop a research question, collect data in the field about students' nutrition, and analyze their data. Students use their research on nutritional requirements and student data to recommend changes in the school to improve student nutrition. Student teams use *Showing Evidence* to identify and summarize their persuasive arguments with the data they have gathered. They present their findings to the appropriate audience with decision-making authority.

Curriculum Framing Questions

- **Essential Question**
How can I stay healthy?
- **Unit Questions**
How healthy are our school's students?
How can we plan and follow a healthy, nutritious, and appetizing diet?
- **Content Questions**
What is the food pyramid?
How do I determine calories burned?
What is the right amount of calories for me?
How do I count a serving size?
How do I graphically represent data?

Assessment Processes

View how a variety of student-centered [assessments](#) are used in the Food for Thought Unit Plan. These assessments help students and teachers set goals; monitor student progress; provide feedback; assess thinking, processes, performances, and products; and reflect on learning throughout the learning cycle.

Instructional Procedures

Unit Preparation

- The [nutrition notes](#) sheet summarizes many of the concepts addressed in this unit. The information is presented as background for teachers, but you may want to make copies for students as well.
- Print copies or provide access to an online version of the [nutrition learning log](#).
- Print copies of all [assessments](#) and provide access online.
- If desired, create a class project wiki or collaboration document site to provide one location for project files, calendar, and student team files and plans. Create student accounts or have students create their own accounts on first access.
- Prepare for labs on calculating food servings to include various foods, scales, food charts
- Test *USDA MyPyramid Tracker* (www.mypyramidtracker.gov/default.htm) on student computers to ensure access
- Contact school personnel who may be resources for teams to obtain data, such as the dietician, cafeteria supervisor, finance analyst, and so forth. Discuss project and ask if they would be willing to meet with students. Obtain their contact information.
- Contact school personnel with decision making authority on nutrition matters such as the principal, school board, district dietician, teacher in another class for presentation to students, and so forth. Discuss project and ask if they would be willing to hear and consider student presentations. Obtain their contact information.
- Set up an online live poll using Poll Everywhere (www.polleverywhere.com) for initial student opinions on nutrition during unit introduction. Students take a poll using cell phones or online devices and share with other students who may not have the right equipment. Obtain parent permission to text replies using student phones to ensure no costs will incur according to their mobile phone plan.
- Set up a *Showing Evidence* project for teams to identify the persuasive elements of their presentation with appropriate supporting data with the prompt: *How can we improve our school's students' nutrition or eating habits?*

Unit Introduction

Introduce the Essential Question (or reintroduce, if using the Essential Question over several units), *How can I stay healthy?* Discuss the following kinds of questions:

- What does it mean to be healthy?
- What contributes to a healthy body?
- What areas of a teenage life do you think are typically unhealthy?

When the topic of diet or eating habits is mentioned ask, *"If, as the saying goes, 'You are what you eat,' does that make me a cheeseburger? What does that phrase mean? Is it true? In what ways?"*

Using cell phones (see how live polls work at www.polleverywhere.com/how-it-works*, have students take a live poll on their perceived eating habits and what they consider *healthy*. Include questions that identify:

- *What kinds of foods do you eat?*
- *How healthy do you think your typical diet is?*
- *When do you make healthy food choices?*
- *On average, how healthy do you think the teens eat at our school?*
- *What do you think contributes to unhealthy eating by the students in our school?*

Discuss poll results and introduce the first Unit Question, *How healthy are our school's students?* Promote a discussion about nutrition, and record prior knowledge, interesting ideas, and questions that arise.

Phase 1: Determining Your Own Eating Habits

1. Pass out a [nutrition learning log](#) and a [learning log rubric](#) to each student. Explain to students that they will be writing in their learning logs throughout the unit to reflect on questions, record information, and document their thinking. The learning logs are an important part of the unit and assessed at the end of the unit. Therefore, the learning log rubric outlines expectations and guidelines for students to refer to while they write entries in their learning logs. Review the rubric with students and consider drafting an entry with them as an example.

Direct students to answer the question, *What factors influence my food choices?* in their learning logs. When writing is finished, ask students to voice their ideas, and cluster the ideas under logical categories. Some answers may include reasons such as hunger, taste, visual appeal, health, convenience, habit, novelty, cultural tradition, cost, and advertising.

Students track all they eat for seven days using the *USDA MyPyramid Tracker* (www.mypyramidtracker.gov/default.htm), an online dietary and physical activity assessment tool to keep track of and assess food intake and physical activity. For extra credit or to support deeper learning for gifted students, students may choose to also track their daily physical activity. Students can use either a paper [food diary](#) or an application on their cell phone to keep track of what they eat throughout the day and then enter the information into the *USDA MyPyramid Tracker*. Have students set up their accounts and enter their height, weight, age, and food already eaten that day.

2. During this week, hold labs to understand serving sizes, portions, and how to count composite foods, like sandwiches, which may account for one meat serving, two bread servings, one vegetable serving, and one fat/other serving. Help familiarize students with the food groups by having them create large food group posters that can be posted around the classroom. Create a bulletin board area that displays in big letters the following labels:
 - Milk/Dairy
 - Meat
 - Vegetables
 - Fruit
 - Grains

- Others

Have students cut out pictures of food from magazines, circulars, and newspapers and glue them to the appropriate banner.

3. Introduce the concept of food as fuel and the term *calorie* (see the [nutrition notes](#)). Show students how to find their ideal daily calorie levels as recommended in the nutrition notes calories chart. View and compare calories for various typical foods eaten from an online calorie counter or cell phone application. Ask students to reflect on one day's diet from their food diaries entered into *USDA MyPyramid Tracker* by using the site's analysis of their nutrient intakes, and then answer the following questions:
 - *What is the right number of calories for me?*
 - *Do I eat the proper number of calories, too few, or too many?*
 - *How can my diet be altered so I consume the right amount of calories?*
 - *How can my activity level be altered?*

Reflect on the previous day and estimate how many minutes were spent engaged in different activities during waking hours. Record the activities in the learning log. Activities might include sitting in class, sports practice, watching television, walking to school, PE class, and doing specific chores. Use an online activity calorie counter (such as [Activity Calorie Counter](#)* or mobile phone application) to convert the length of time for the activity multiplied by the type of the activity to get the calories expended.

4. Have students discuss their analysis of their daily activity.
 - *What was your most common activity?*
 - *What was the most common activity of the class?*
 - *What was your most strenuous activity or activity burning the most calories?*
 - *What was the most strenuous activity recorded of the class?*
 - *How much energy did you expend for the day?*
 - *Who expended the most energy?*
 - *How many hours did the whole class spend in front of the television?*

Have students enter one day's activities into the *USDA MyPyramid Tracker* and then analyze their physical activities and energy balance using the site's tools. Create a large classroom chart that shows common activity categories and the calories they expend. Have students create miniature versions of the chart in their learning logs.

5. Discuss food choices and the impact of small changes in diet over time. For instance, a person can choose to have a glass of milk or a can of soda with lunch—*How do these drinks compare nutritionally?* Have students choose two foods, research their nutritional value (using print or electronic sources), and compare them. Provide students with the [food comparison instructions](#) to guide them through using spreadsheet software when creating their nutritional [food comparison graphs](#). Students may practice interpreting each other's graphs and record their interpretations in their nutrition learning logs.
6. After one week, students use *USDA MyPyramid Tracker* to help analyze the nutrient content of the foods they entered each day and compare it with dietary guidelines, nutrient intakes, food category recommendations. They use the online graph of their eating over the week to analyze their general eating habits. Direct them to resources available at www.choosemyplate.gov.

In their learning logs, students answer the question, *What have I learned about my eating habits?* and include specific data from the *USDA MyPyramid Tracker* (including the graph of their eating habits over the week) and nutritional guidelines data from the *Choose My Plate* Web site. Direct students to analyze their data and consider questions such as:

- Did my eating and nutritional values change on any specific days, why?
- How did my eating change over the weekend versus week days?
- What was surprising about my eating habits? Give specific examples.

In small groups, have students share and compare their eating habits and nutritional intake. Hold a class discussion to discuss similarities that they found in their groups and what they learned about their own eating habits.

7. Revisit the Unit Question, *How can we plan and follow a healthy, nutritious, and appetizing diet?* Have a brief discussion to share ideas. Using the food group banners, "Choose My Plate" graphic depicting recommended percentages of food categories, nutrition charts from packaged food labels, and cafeteria menus from various schools as resources, students plan a day's menu for themselves that meets nutritional guidelines. Discuss with students the Essential Question, *How can I stay healthy?* Have students use the *USDA MyPyramid Tracker* and other sites to identify consequences of consistently eating an imbalanced diet.

Phase 2: Analyzing and Improving Student Nutrition

1. Introduce the project that they will undertake by focusing on the second Unit Question, *How can we plan and follow a healthy, nutritious, and appetizing diet?* Discuss their views on the food available on campus and possible ways it could be improved to promote healthy eating. Explain that in small groups, they will be
 - Developing a research question around the Unit Questions
 - Collecting and analyzing data in the field needed to answer their research question, such as
 - Determining the average students' nutrition
 - Analyzing the nutritional value of the cafeteria food
 - Identifying the effects of on-campus vending machines on student eating habits, and so forth
 - Using their research to determine healthier alternatives that could be implemented in the school.
 - Creating persuasive presentations to present to the appropriate audience such as students, principal, school board, and/or district nutritionist and suggesting changes to promote healthy eating (for example, a revised cafeteria menu offering healthier choices that students would eat).
- Introduce and discuss the [Project Rubric](#). If you have created a project wiki or collaborative document site, introduce the site as one location for project files, calendar, and student team files and plans. Provide students with their login information.

Introduce the research process that students follow during the project and distribute the [Project Checklist](#) to help students monitor their progress:

- a. Identify a Question or Problem

- b. Collect Data or Evidence
 - c. Analyze Data
 - d. Draw Conclusions
 - e. Share Findings
2. Discuss what makes a good research question. First, start by considering questions that relate to nutrition at school:
- What do I notice?
 - What do I wonder?
 - What interests me?
 - Why does...happen?
 - What causes...?
 - Can my question be answered by collecting the right data?

Then brainstorm with the whole group some possible research questions to evaluate and/or improve nutrition at school or student eating habits, such as:

- How nutritious are the foods served at school?
- How active are our students in comparison with their calorie intake?
- How balanced are our school's students' food intake?
- How many empty calories (junk food) do our students eat?

Place students in heterogeneous groups of 3 to 5 for the project. Have student groups meet to identify the research question they will use. Have all groups post their questions and ensure questions are not duplicated. Have students record in their learning logs their group's research question and initial ideas for collecting data.

3. Based on students' research questions, prepare students for fieldwork. Identify best practices for creating surveys, identifying appropriate population, collecting data, and ensuring accuracy. Discuss the difference between quantitative and qualitative data and best uses of both. Identify various methods for recording data and ensuring accuracy. Provide and review the [Survey Preparation and Design Tips](#) to students. Identify online resources to support collaborative data collection such as survey creation sites ([Survey Monkey*](#)), collaborative document sites ([Google Docs*](#)), online cafeteria menus from other schools, contact information for relevant school personnel, mobile phone applications for data collection, and so forth.

Have student teams meet to discuss their plans for data collection and begin initial planning. Circulate and meet with teams to ensure a practical and accurate data collection plan is in place. Pair up students from different teams to review their data collection plans and obtain feedback. Have each team review suggestions from peer feedback and incorporate appropriate suggestions. Students are to submit their final plan for data collection, including survey or interview questions, prior to field work. Have students write a summary of their plan for data collection in their learning logs.

4. Conduct mini lessons during the time students are collecting data for appropriate steps in:
- Classifying data
 - Identifying patterns in data

- Making inferences about data
5. After data collection is complete, provide the [Data Conclusions Checklist](#) to teams to support their analysis of the data. Have students write a summary of their conclusions in their learning logs, including any surprising findings or insights.
 6. Have student teams research possible solutions, strategies, or school changes that could support a healthy impact on student nutrition based on their data findings. Have students identify in their learning logs the changes they are proposing and their plan for full team participation in the presentation.
 7. Discuss and present samples of data presentation. Have teams identify the best audience with decision making authority for their presentations. Discuss tailoring a presentation to be appropriate for the intended audience. Review the elements of the [Project Rubric](#) again that target the presentation. Provide the [Data Presentation Checklist](#) to support teams in the creation of their presentations. Revisit the Unit Questions and discuss ideas as a whole class:
 - *How healthy are our school's students?*
 - *How can we plan and follow a healthy, nutritious, and appetizing diet?*
 8. Introduce *Showing Evidence* and provide copies of [Showing Evidence Tips](#). Demonstrate a sample [Showing Evidence argument](#) that is not based on any of the teams' specific research question. Have students create a *Showing Evidence* argument to identify the persuasive elements of their presentation with appropriate supporting data and possible counter arguments that they must address to prepare content for their presentation. Create peer-review teams within *Showing Evidence* to provide comments on the strength of their arguments. Show them how to use the print view of the argument so they can copy and paste key ideas and evidence into their presentation to create evidence-based persuasive presentations.
 9. When [presentations](#) are complete, have teams present to each other to provide and receive feedback for improvement using the [Project Rubric](#). Schedule time for students to present and discuss their findings with the appropriate audience.

Phase 3: Final Assessment

1. Assess students' projects using the [Project Rubric](#).
2. Ask students to write final reflections on their learning throughout the project, including learning about nutrition, conducting research, collaboration, and critical thinking.
3. Assess student learning with a final exam covering nutrition content such as terms, calculating serving size, the food groups, calories, and so forth.

Prerequisite Skills

- Basic food measuring skills
- Basic spreadsheet skills

Differentiated Instruction

Resource Student

- Use online resources and tools at the appropriate reading level
- Place students in heterogeneous groups so they can receive help from peers and provide assistance to others in their areas of expertise
- Establish daily routines for checking progress and setting goals

Gifted Student

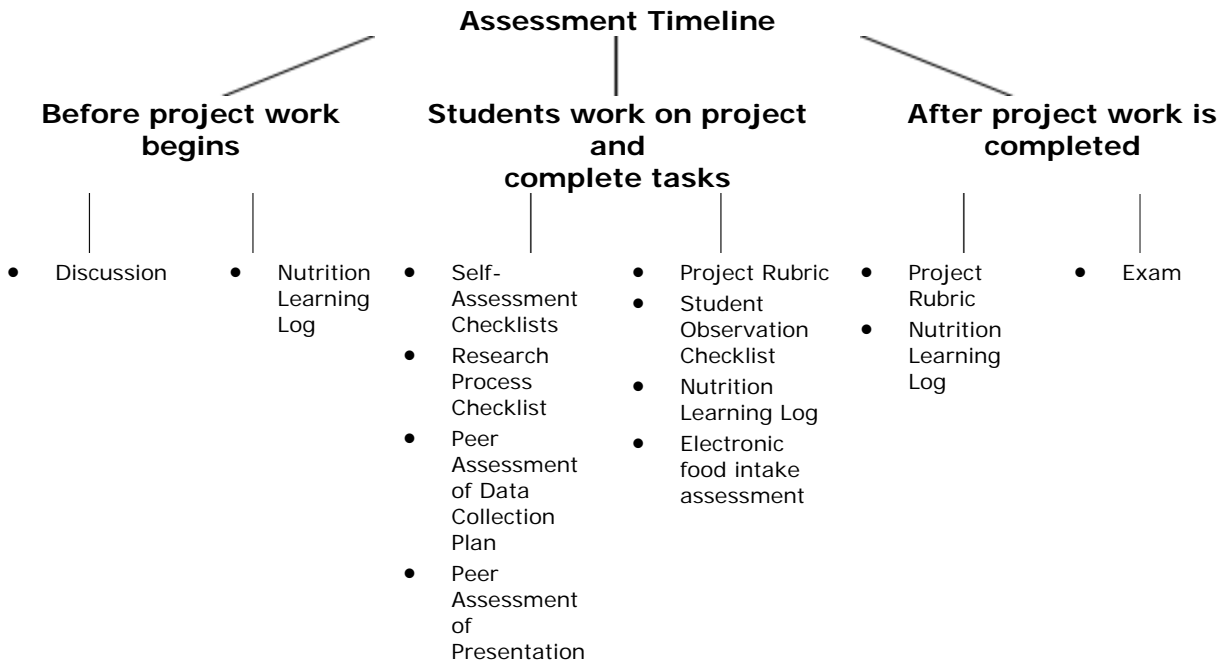
- Extend learning through deeper analysis, such as:
 - Analyzing their own food intake with daily activity (calories burned)
 - Creating an eating and exercise plan to meet personal goals
 - Analyzing and comparing fast food
 - Comparing the cafeteria offerings from their school with another school

English Language Learner

- Use calorie counter guides with images and text
- Encourage the use of foods from their native culture in their research and compare their nutritional value of their native food with other types of food they eat.
- Allow use of Web sites in students' first language
- Place students in heterogeneous groups to support language development

THINGS YOU NEED

Assessment Plan



Class discusses initial thoughts about what *healthy* means to them and the Essential Question, *How can I stay healthy?* Using cell phones, they take a live poll on their perceived eating habits and what they consider *healthy* to identify misconceptions, prior knowledge, and student questions. Students use an online or paper [food diary](#)

to keep track and assess their nutritional intake. A nutritional learning log is used throughout the unit to reflect on questions, record information, document their thinking, and summarize their learning at the end of the unit. The [learning log rubric](#) outlines expectations and guidelines for students to refer to while they write entries in their learning logs to reflect on and record their learning and to provide a grade at the end of the unit. The [Project Rubric](#) is used by students as a self-assessment tool while they work on their projects, and by the teacher as a grading tool at the end of the unit. A [Project Checklist](#) is provided to help students manage their work in a team. [Survey Preparation and Design Tips](#) are provided to guide students in the preparation of an effective survey. [Data Conclusions Checklist](#) and [Data Presentation Checklist](#) are provided to help students self-assess their work throughout the project. [Showing Evidence Tips](#) provide guidance and self-assessment to student teams as they create effective and appropriate evidence, evaluate evidence source, and evaluate evidence support of proposal. Peer reviews are conducted at key points in the project to provide feedback and fresh ideas. At the end of the unit, students take a final exam on their understanding of nutrition.

Content Standards and Objectives

National Health Education Standards

Standard 8: Students will demonstrate the ability to advocate for personal, family, and community health.

Targeted Content Standards and Benchmarks Oregon Science Standards

7.3S.1 Based on observations and science principles, propose questions or hypotheses that can be examined through scientific investigation. Design and conduct a scientific investigation that uses appropriate tools and techniques to collect relevant data.

7.3S.2 Organize, display, and analyze relevant data, construct an evidence-based explanation of the results of an investigation, and communicate the conclusions including possible sources of error.

Oregon Health Standards

Compare and contrast the food groups, nutrients and serving size in the USDA recommended guidelines.

Explain the importance of variety and moderation in food selection and consumption.

Student Objectives

Students will:

- Classify and analyze the nutritional values of foods
- Identify and define the nutritional needs of students in their school
- Collect, organize, classify, identify patterns, evaluate, and analyze data related to student eating habits and the food available at the school
- Draw conclusions based on data on what influences student food choices, and reflect on their own and their fellow students' eating patterns
- Develop a persuasive plan to improve healthy eating choices at school

Technology and Resources

Printed Materials

Allison, L. (1976). *Blood and guts: A working guide to your own insides*. New York: Little, Brown, and Company.

Meeks, L. (2002). *Comprehensive school health education: Totally awesome strategies for teaching health, 3rd edition*. Columbus, OH: McGraw-Hill Companies.

Supplies

Basic art supplies

Old magazines and newspapers (food section)

Grocery store fliers

Internet Resources

Teacher Resource

- **Guidebook for Student Projects in Data Analysis**

www.amstat.org/chapters/nevada/k12postercompetition/NVSA%20Data%20Project%20Guide%20v0907.pdf*

A guide for K–12 teachers in the creation of projects that incorporate data analysis. Topics include:

- Asking the Question
- Collecting the Data
- Organizing and Analyzing the Data
- Completing the Project
- Assessing the Project

Nutrition Data Trackers

- **Activity Calorie Counter**

www.primusweb.com/fitnesspartner/calculat.htm*

How to count calories

- **Calorie Control Council's Enhanced Calorie Calculator**

www.caloriescount.org/calculator.html*

Calorie calculator

- **Choose My Plate**

www.choosemyplate.gov*

USDA's Web site containing information on food groups, the revised 2010 nutritional guidelines, specific food nutrition information, creating a personalized plan or menu, analyzing one's diet, and teacher and student nutrition resources.

- **Smartphone calorie counter applications:**

- MyFitnessPal
- fatsecret

- **USDA MyPyramid Tracker**

www.mypyramidtracker.gov/default.htm*

An online dietary and physical activity assessment tool to keep track of and assess food intake and physical activity. Analyzes the nutrient content of the foods you enter for one day and compares it with dietary guidelines, nutrient intakes, food pyramid recommendations. Will also analyze and graph your eating over time. Does not require an e-mail address to register.

Polling Resources

- **Poll Everywhere**
www.polleverywhere.com*
Quick response polling site. Participants can use Twitter*, text messaging, web-enabled phones, or the Web to respond.
- **Polldaddy**
<http://polldaddy.com>*
Online survey – to collect nutrition survey information and/or cafeteria feedback
- **Survey Monkey**
www.surveymonkey.com*
Online survey – to collect nutrition survey information and/or cafeteria feedback

Online Thinking Tools

- **Intel Education *Showing Evidence***
www.intel.com/education/showingevidence
Argumentation tool

Nutrition Information

- **Fast Food Facts**
www.foodfacts.info*
Nutritional information on fast food
- **FDA's Food Safety & Nutrition Information for Kids and Teens**
www.fda.gov/Food/ResourcesForYou/Consumers/KidsTeens/default.htm*
Nutritional information
- **Nutrition Dictionary**
www.foodfit.com/healthy/nutritiondictionary.asp*
Definition of nutrition terms
- **TeensHealth from Nemours**
"What's the right weight for my height?"
http://kidshealth.org/teen/food_fitness/dieting/weight_height.html*
Includes BMI calculator
- **What's in a Food Label**
www.healthchecksyste.ms.com/label.htm*
Shows information about what is on food labels
- **WIN:Weight-control Information Network**
Take Charge of Your Health: A Guide for Teenagers
http://win.niddk.nih.gov/publications/take_charge.htm*

Understanding healthy foods, serving sizes, food labels

Technology—Hardware

- Internet-connected computers for research, data input, analysis, and presentations
- Projection system for lessons and presentations
- Optional:
 - Student cell phones for recording observations, surveys, food intake, exercise, and photos of food
 - Digital camera for photos of cafeteria and student lunches

Technology—Software

- Spreadsheet for entering and analyzing data
- Presentation software for presenting cafeteria recommendations

Other Resources

- Access to/interview with school personnel such as the dietician, cafeteria supervisor, finance analyst, principal, school board, teacher of another class for student presentation

Credits

A classroom teacher participating in the Intel® Teach Program developed the idea for this unit plan. A team of teachers expanded the plan into the example you see here.