

Georgia State University

ScholarWorks @ Georgia State University

Nutrition Masters Projects

Department of Nutrition

7-31-2024

Nutrition Focused Lesson Plans Created for Implementation in the Georgia High School Health Classroom

Samantha Webber
Georgia State University

Follow this and additional works at: https://scholarworks.gsu.edu/nutrition_mastersprojects

Recommended Citation

Webber, Samantha, "Nutrition Focused Lesson Plans Created for Implementation in the Georgia High School Health Classroom." , Georgia State University, 2024.
doi: <https://doi.org/10.57709/37391751>

This Project is brought to you for free and open access by the Department of Nutrition at ScholarWorks @ Georgia State University. It has been accepted for inclusion in Nutrition Masters Projects by an authorized administrator of ScholarWorks @ Georgia State University. For more information, please contact scholarworks@gsu.edu.

NUTRITION-FOCUSED LESSON PLANS CREATED FOR IMPLEMENTATION IN THE
GEORGIA HIGH SCHOOL HEALTH CLASSROOM

By

SAMANTHA WEBBER

B.S. Georgia Institute of Technology, 2015

A Master's Project Submitted to the Graduate Committee

In the Department of Nutrition at Georgia State University in Partial Fulfillment

of the

Requirements for the Degree

MASTER OF SCIENCE

ATLANTA, GA

2024

In the 2018 position paper on *Comprehensive Nutrition Programs and Services in Schools*, the Academy of Nutrition and Dietetics stated that “comprehensive, integrated nutrition programs in preschool through high school are essential to improve the health, nutritional status, and academic performance of [children in the United States]”¹. In the paper, nutrition education is cited as a fundamental feature of nutrition programming in schools¹. Nutrition education has been shown to increase healthful food choices and decrease the risk of childhood obesity¹. This literature review aims to outline the importance of school-based nutrition education in combatting the childhood obesity epidemic and affecting positive adolescent health outcomes. It will do so by reviewing the efficacy and outcomes of school-based nutrition education interventions and the components required for successful implementation.

According to the 2020-2025 Dietary Guidelines for Americans, today’s adolescents are falling short of the Dietary Reference Intakes (DRIs) for vegetables, fruits, dairy, and whole grains, and exceeding the DRIs for added sugars, saturated fat, and sodium². Thus, the eating pattern of the average American adolescent is not adequately supporting growth and development during these crucial years. The combination of a decreased physical activity and poor dietary intake put adolescents at a higher risk for overweight and obesity^{2,3}. The prevalence of childhood obesity has reached epidemic levels in the United States³. According to the Centers for Disease Control (CDC), between 2017 and 2020, 19.7%, or 14.7 million children and adolescents are classified as having obesity³. Furthermore, between 2017-2020, in adolescents aged 12-19 years old, obesity rates reached 22.2%³. Startlingly, over the past three decades, the rates of adolescent obesity have tripled⁴. Obesity is categorized as a body mass index (BMI) equal to or greater than the 95th percentile when measured against the sex-specific CDC BMI-for-age growth charts³. Obesity in adolescents is associated with an increased risk of cardiometabolic factors such as high blood pressure, elevated blood lipids, type-2 diabetes, sleep apnea, some forms of cancer, as well as psychological effects including low self-esteem, and depression^{4,5}. Obesity is a complicated disease and can occur due to a combination of several factors, including genetic, socioeconomic, environmental, health, and behavioral factors⁵. Several of these are not controllable, but behavioral factors inclusive of diet and physical activity level are. Nutrition education has been proposed and utilized

as a preventative measure to equip children and adolescents with the tools and knowledge to combat the obesity epidemic^{1,4,6-8}.

Several studies have examined the effects of school-based nutrition programs on adolescent's food choices and health outcomes^{6,7,10,11}. A 2022 systematic review and meta-analysis studied the relationship between school-based food and nutrition education interventions on the food consumption of adolescents ages 10-19⁶. The meta-analysis, consisting of 11 randomized controlled trials, found a significant increase in the number of times vegetables were consumed per week post school-based nutrition education interventions⁶. Moreover, in a 2013 meta-analysis, the effect of school-based nutrition education on participants' BMI was analyzed⁷. This meta-analysis compiled data from eight randomized controlled trials conducted in seven countries across the globe, resulting in sample size of 8,451 participants, ages 5-18⁷. The school-based nutrition education interventions from studies included in the meta-analysis ranged in length from four months to three years⁷. Researchers found that the school-based nutrition education intervention resulted in a significant decrease of .33 kg/m² (95% CI: -0.11 to -0.55, p=0.003) in the BMI of participants⁷. This meta-analysis also revealed that in studies lasting longer than a year, BMI was reduced by an average of 0.48 kg/m² (95% CI: -.76 to -.19; p< 0.001). Both meta-analyses support the claim that school-based nutrition interventions can lead to positive health outcomes for adolescents.

The school environment provides an ideal setting for the transmission of nutrition education, as adolescents spend a large portion of their day engaged in school-based activities⁶⁻⁹. Furthermore, the organizational structure and resources available in schools allow for the possibility of providing nutrition education using a multicomponent or multi-strategy approach involving a secondary active component in addition to simply providing traditional classroom instruction alone^{6,10}. Elements of a multicomponent approach could include parental involvement^{6,10}, providing teachers with training and resources^{9,12}, altering the school food environment¹⁰, and implementing behavior change strategies to target specific modifiable behaviors¹¹. Additionally, the Academy of Nutrition and Dietetics asserts that effective school-based nutrition education aligns with the interests and motivations of students, utilizes behavior change strategies to target identified behaviors, provides opportunities for students to participate in growing and

preparing food, is based on a curriculum that is aligned with state and national standards, employs active learning methods and leverages technology, is implemented for a sufficient amount of time to effect change, and provides teachers with adequate training and support for quality instruction¹.

One of the components listed across several studies as imperative for effective nutrition education is teacher support and training^{1,6,9,12}. A 2015 study conducted on 102 pre-kindergarten through twelfth grade public school teachers in California highlights teachers' need for support¹². The study used an online survey to better understand the educators' perceived barriers to educating students about nutrition, identify what resources teachers currently use for nutrition education, and determine the association between teacher's knowledge and nutrition-based instruction¹². From those surveyed, only 37% of respondents reported teaching nutrition in their classrooms¹². Regarding the teachers who did not report teaching nutrition in their classrooms, researchers found that common major barriers included a lack of instructional time for nutrition education (54%), the belief that nutrition was unrelated to the subject that they taught in their classroom (32%), and a lack of available nutrition education resources (32%)¹². A component of the online survey used a validated questionnaire to test educators' nutrition knowledge and researchers used an ordinary least squares regression analysis to analyze the results¹². The mean score on the questionnaire was 35.8 out of a total score of 58 (SD 10.3)¹². Interestingly, nutrition knowledge was not significantly associated with the actual implementation of nutrition-based instruction in a teacher's classroom. However, nutrition knowledge scores were significantly and positively associated with the variables of high school teachers ($\beta = 5.13$; $p < .05$) and educators who identified as female ($\beta = 6.78$; $p < .05$). Nutrition knowledge scores were significantly and negatively associated with those who identified as Hispanic or Latino ($\beta = -15.50$; $p < .001$)¹².

The positive effect of teacher support and training was demonstrated by a 2011 study conducted on 59 health educators in Michigan who taught 6-12th graders⁹. The study used a validated survey tool pre and post intervention to measure teacher self-efficacy regarding teaching nutrition curriculum, the perceived nutrition outcomes teachers had for their students, and the educators' intention to teach nutrition content in their classroom⁹. For the intervention, teachers were divided into two groups⁹. The

intervention group received eight hours of professional development focused on equipping teachers with the content knowledge, instructional techniques, and resources needed to implement nutrition education based on active learning methods in their classroom⁹. Nutrition curriculum was based on the Michigan Model Book “What’s Food Got to Do with It?” curriculum and consisted of eight lessons focused on topics including the food pyramid and food groups, serving sizes, food labels, evaluating nutrition information, healthy weight and body image, nutrient density of foods, school nutrition, and navigating healthy eating at fast food restaurants⁹. The control group did not receive any training⁹. Responses from the questionnaire were analyzed using a 2 group by 2 times ANOVA⁹. After the professional development intervention, researchers found that the teachers in the intervention group had a significant increase in their post intervention self-efficacy and perceived nutrition outcome scores when compared to their pre-intervention values and when compared to the post intervention scores of the control group⁹. Regarding intention to teach nutrition content, there was a significant increase in this value for the intervention teachers when comparing data from their pre and post intervention scores⁹. Although this study consisted of a small sample size, it underscores the importance of teacher support and training for effective nutrition education.

The studies reviewed in this paper highlight the need for school-based nutrition education combat the current public health crisis of childhood obesity and improve overall student health outcomes¹⁻¹². For these interventions to be effective and affect change, research suggests employing a multicomponent, active learning approach that is specifically tailored to the behaviors, interests, and motivations of students and equips teachers with the tools and knowledge to teach nutrition principles and skills confidently and effectively^{1,6,7,9-12}.

OUTCOME DOCUMENT:

Table Of Contents:

Acknowledgements and Dedication ... pg. 7
Lesson 1: Dietary Guidelines for Americans and Fast Food ...pg. 8
Lesson 2: Comparing Intake to Dietary Reference Intakes ... pg. 11
Lesson 3: Reading and Utilizing Food Labels ... pg. 13
Lesson 4: MyPlate and Portion Sizing ... pg. 16
Lesson 5: The Effect of Food Media on Eating Habits and Nutrition... pg. 20
Lesson 6: Digging Into School Lunch... pg. 23

A special thank you to my professors at Georgia State University, my Coordinated Program preceptors, my students, my Capstone committee, and most especially, my family. You've taught me so much in these past two years, and I've tried to include as much as possible in the pages that follow.

This is dedicated to the teachers everywhere. You are some of the most hardworking people on the planet. Thank you!

Lesson 1: Dietary Guidelines for Americans and Fast Food

Note: The introductory information below is a brief overview of the four key guidelines from the 2020-2025 Dietary Guidelines for Americans. The full document can be found here:

https://www.dietaryguidelines.gov/sites/default/files/2021-03/Dietary_Guidelines_for_Americans-2020-2025.pdf

(Full citation in the sources section below).

Introduction:

The Dietary Guidelines for Americans is a document published every 5 years by the US Department of Agriculture (USDA) and Department of Health and Human Services (DHHS) to provide science-based advice for Americans at every life stage to meet nutrient needs, maintain good health, and prevent chronic disease.

The DGAs provides guidelines for Americans organized by specific life stage, but there are four key guidelines that apply to every life stage:

1. Follow a healthy dietary pattern at every life stage.

- A dietary pattern is the total picture of all the foods and beverages an individual consumes over time.

2. Customize and enjoy nutrient-dense food and beverage choices to reflect personal preferences, cultural traditions, and budgetary considerations.

3. Focus on meeting food group needs with nutrient-dense foods and beverages and stay within calorie limits.

4. Limit foods and beverages higher in added sugars, saturated fat, and sodium, and limit alcoholic beverages.

- Added sugar:
 - < 2 years old: Do not consume foods and beverages with added sugar.
 - > 2 years old: Less than 10% of total calories should come from added sugar.
 - If you are eating a 1700 calorie diet, this means that no more than 170 calories should come from added sugars. This is equivalent to 42.5 grams of added sugar.
 - *Note: The American Academy of Pediatrics has stricter guidelines and suggests no more than 25g of added sugar daily.*
- Saturated Fat:
 - >2 years old: Less than 10% of total calories should come from saturated fats.
 - If you are eating a 1700 calorie diet, this means that no more than 170 calories should come from saturated fat. This is equivalent to about 18 grams of saturated fat.
- Sodium:
 - >14 years old: Less than 2,300 mg per day.

Many people rely on fast-food restaurants to provide quick and inexpensive meals throughout the week. However, many options at fast food restaurants are high in sodium, saturated fats, and added sugars – the very nutrients we are encouraged to limit. Today, we'll analyze the menus of popular fast-food restaurants and identify items that can help us stay under the limits listed in the DGAs.

Task:

You will be eating one meal at a fast-food restaurant of your choice. Navigate to the restaurant's nutrition information section on their website.

1. First, identify a combination of entrée + at least one side + beverage that you would typically order. Record the sodium, saturated fat, and added sugar of this meal.

2. Next, using the nutrition information, create a meal that adheres to the following guidelines:

- Sodium: Less than 800 mg
- Saturated Fat: Less than 10 g
- Added Sugar: Less than 15 g

Note: You might need to adjust the size or opt for the kid's version of certain items to fit within the guidelines. Also, don't forget to include sauces if you use them!

Example:

Fast Food Restaurant: Taco Bell

Note: Values recorded in table are reflective of menu information available in July 2024.

Typical Meal

	<i>Menu Item</i>	<i>Saturated Fat (g)</i>	<i>Sodium (mg)</i>	<i>Added Sugar (g)</i>
<i>Entree</i>	<i>Cheesy Gordita Crunch</i>	<i>11</i>	<i>840</i>	<i>1</i>
<i>Side</i>	<i>Loaded Beef Nachos</i>	<i>5</i>	<i>930</i>	<i>0</i>
<i>Drink</i>	<i>Limonada Freeze</i>	<i>0</i>	<i>120</i>	<i>50</i>
	<i>Total:</i>	<i>16</i>	<i>1890</i>	<i>51</i>

	<i>Menu Item</i>	<i>Saturated Fat (g)</i>	<i>Sodium (mg)</i>	<i>Added Sugar (g)</i>
<i>Entree</i>	<i>Black Bean Chalupa Supreme</i>	<i>4</i>	<i>460</i>	<i>0</i>
<i>Side</i>	<i>Chips and Nacho Cheese Sauce</i>	<i>1.5</i>	<i>280</i>	<i>0</i>
<i>Drink</i>	<i>Ice Water</i>	<i>0</i>	<i>0</i>	<i>0</i>
	<i>Total:</i>	<i>5.5</i>	<i>740</i>	<i>0</i>

Fast Food Restaurant: _____

Typical Meal

	Menu Item	Saturated Fat (g)	Sodium (mg)	Added Sugar (g)
Entree				
Side				
Drink				
	Total:			

	Menu Item	Saturated Fat (g)	Sodium (mg)	Added Sugar (g)
	Entree			
	Side			
	Drink			
	Total:			

Reflect:

1. How easy or difficult was it to stick within the limits provided? Why?
2. What do you think will be barriers to choosing foods lower in saturated fat, sodium, and added sugars?

Sources:

1. Home: Dietary guidelines for Americans. Home | Dietary Guidelines for Americans. Accessed July 15, 2024. <https://www.dietaryguidelines.gov/>.
2. Koriath T. Added sugar in kids’ diets: How much is too much? Publications.aap.org. March 25, 2019. Accessed July 15, 2024. <https://publications.aap.org/aapnews/news/7331/Added-sugar-in-kids-diets-How-much-is-too-much>.

Reflection:

1. What can you identify as barriers to meeting the recommended intake for all nutrients?
2. What steps can you take to incorporate more of the nutrients you are missing into your eating pattern?

Sources:

1. Blake JS. *Nutrition and You*. 6th ed. Pearson Education; 2022.
2. Office of dietary supplements - nutrient recommendations and databases. NIH Office of Dietary Supplements. Accessed July 15, 2024.
<https://ods.od.nih.gov/HealthInformation/nutrientrecommendations.aspx#dri>

Lesson 3: Reading and Utilizing Food Labels

Introduction:

If you've taken a walk around the grocery store lately, you'll see all kinds of packaging. Food Labels are visual tools that we can use as consumers to better understand the amount of nutrients of the food we eat. They also allow us to compare similar foods and make more informed choices based on our individualized nutrient needs and budgets. Food Labels are required by law to be on all packaged foods in the United States.

Note: The following is a summary of the FDA article "How to Understand and Use the Nutrition Facts Label". You can access the full article here: <https://www.fda.gov/food/nutrition-facts-label/how-understand-and-use-nutrition-facts-label> (Full Citation in sources section below)

1. Serving Information →

2. Calories →

3. Nutrients →

4. Quick Guide to percent Daily Value (%DV)
• 5% or less is **low**
• 20% or more is **high**

Nutrition Facts	
4 servings per container	
Serving size	1 cup (227g)
Amount per serving	
Calories	280
% Daily Value*	
Total Fat 9g	12%
Saturated Fat 4.5g	23%
Trans Fat 0g	
Cholesterol 35mg	12%
Sodium 850mg	37%
Total Carbohydrate 34g	12%
Dietary Fiber 4g	14%
Total Sugars 6g	
Includes 0g Added Sugars	0%
Protein 15g	
Vitamin D 0mcg	0%
Calcium 320mg	25%
Iron 1.6mg	8%
Potassium 510mg	10%

* The % Daily Value (DV) tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for general nutrition advice.

Image Source: <https://www.fda.gov/food/nutrition-facts-label/how-understand-and-use-nutrition-facts-label>

Food Labels can be divided in four main sections: **Serving Information**, **Calories**, **Nutrients**, and **% Daily Value**. Each of these sections help you as the consumer make an informed decision about the food you purchase and ultimately eat.

- **Serving Information:** The serving size is always listed at the top of the food label. Pay close attention to this number. If you eat multiple servings of the food item, you will need to multiply your nutrient values by how many servings you consume.
- **Calories:** This number tells you how many calories are in one serving. This number will help you ensure that you stay within your daily calorie goals.
- **Nutrients:** Let's look at the three nutrients we want to limit: **saturated fat, added sugar, and sodium**. Regular overconsumption of these nutrients has been associated with an increased risk of chronic diseases like high blood pressure, heart disease, and diabetes. Nutrients we want to emphasize include **Dietary Fiber, Vitamin D, Calcium, Iron, and Potassium**. The typical American does not consume enough of these nutrients.

- **Daily Value:** We can use the %DV portion to make decisions about the nutrient profile of foods and make comparisons between several choices.
 - If the DV% is 20% or more, the food is considered to be high in that nutrient.
 - If the DV% is 5% or less, the food is considered to be low in that nutrient.

Task:

1. Navigate to the grocery store website of your choice. (Kroger, Walmart, Publix, etc. The website must display nutrition and pricing information.)
2. Choose three packaged foods that are similar. (Example – three different types or brands of cereal, crackers, or yogurt) Analyze their food labels and prices. Based on the information provided, decide which option is the best for your eating pattern and your budget. Provide justification!

Example:

	<i>Option 1 Chobani Plain Nonfat Greek Yogurt</i>	<i>Option 2 Simple Truth Organic Plain Nonfat Greek Yogurt</i>	<i>Option 3 Simple Truth Organic Greek Nonfat Vanilla Bean Yogurt</i>
Container Size	32 oz	32 oz	32 oz
Servings/Container	5	5	5
Serving Size	$\frac{3}{4}$ cup	$\frac{2}{3}$ cup	$\frac{2}{3}$ cup
Calories	90	110	140
<i>Saturated Fat (g)</i>	0	0	0
<i>Sodium (mg)</i>	65	85	75
<i>Added Sugar (g)</i>	0	0	12
<i>Protein (g)</i>	16	18	16
<i>Fiber (g)</i>	0	0	0
<i>Vitamin D (mcg)</i>	0	0	0
<i>Calcium (mg)</i>	150	150	150
<i>Iron (mg)</i>	0	0	0
<i>Potassium (mg)</i>	190	170	170
Price (\$)	\$6.49	\$4.49	\$4.49
Price/Serving (\$)	\$1.30	\$0.90	\$0.90

Pricing and Product Information obtained from Kroger.com, July 15, 2024

	Option 1	Option 2	Option 3
Container Size			
Servings/Container			
Serving Size			
Calories			
Saturated Fat (g)			
Sodium (mg)			
Added Sugar (g)			
Protein (g)			
Fiber (g)			
Vitamin D (mcg)			
Calcium (mg)			
Iron (mg)			
Potassium (mg)			
Price (\$)			
Price/Serving (\$)			

Reflection:

1. What factors went into your decision for choosing the best option?
2. How/why would the best option differ from one person to another?

Sources:

1. Center for Food Safety and Applied Nutrition. How to understand and use the nutrition facts label. U.S. Food and Drug Administration. March 5, 2024. Accessed July 15, 2024. <https://www.fda.gov/food/nutrition-facts-label/how-understand-and-use-nutrition-facts-label>.
2. Home: Dietary guidelines for Americans. Home | Dietary Guidelines for Americans. Accessed July 15, 2024. <https://www.dietaryguidelines.gov/>.
3. Blake JS. *Nutrition and You*. 6th ed. Pearson Education; 2022.

Lesson 4: MyPlate and Portion Sizing

Introduction:

MyPlate is a visual food guidance system that was developed to help Americans identify well balanced, nutrient dense eating patterns. It divides food into five main food groups (protein, grains, vegetables, fruit, and dairy) and displays them proportionally on a plate. It was created based on the current Dietary Guidelines for Americans. You can access the MyPlate website here: <https://www.myplate.gov/>

Every individual is unique, and their nutrient needs will be too. Myplate.gov offers several tools for individuals to better understand their specific nutrient requirements based on their age, sex, activity level, as well as other factors.

Cons of MyPlate:

- Cultural foods can be hard to visualize.
- Does not take water into account.
- Not all dietary patterns regularly include dairy.
- Difficult to apply to mixed meals like smoothies, salads, and bowls.

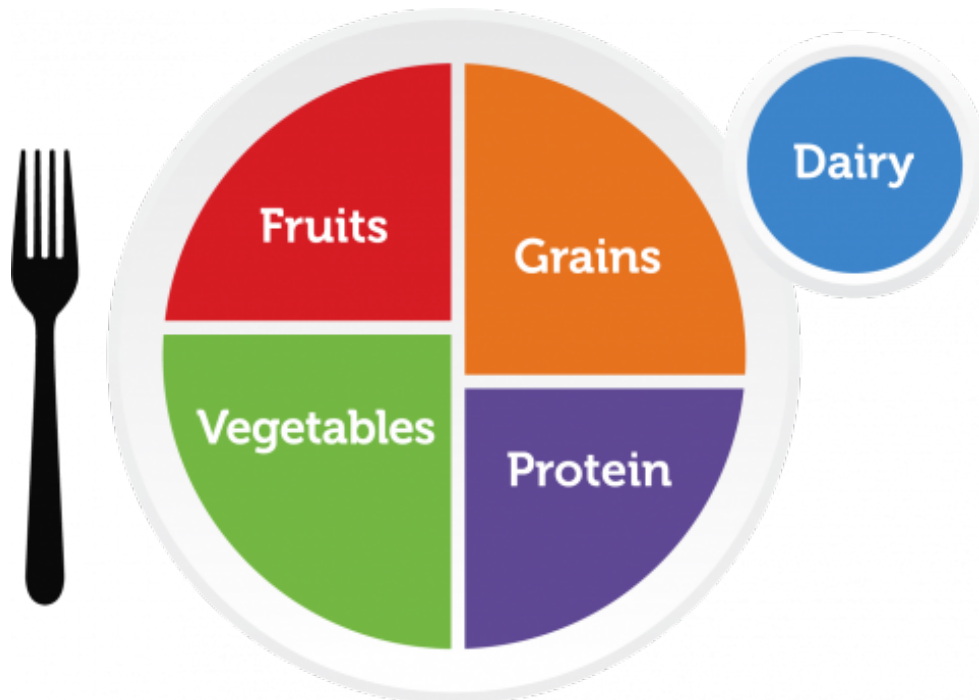


Image Source: myplate.gov

The basic concepts of MyPlate include:

1. Make half your plate fruits and vegetables. Vary your fruits and veggies and eat the rainbow!
2. Focus on whole grains. Aim to make half of the grains you eat whole grains.
3. Choose lean proteins like poultry, legumes, nuts, fish, and tofu.
4. Choose low-fat or fat free dairy.

You can dive into these concepts in more detail on [myplate.gov](https://www.myplate.gov).

As you explore MyPlate, you'll notice that recommendations are provided with portion sizes. You can use measuring cups and spoons to get exact measurements, however, when you're on the go, it is not always

realistic that you'll have these tools with you. To estimate portion sizes, use these tips and tricks listed below!

Measurement	Estimating with your Hand	Estimating with Household objects	What to measure
1 teaspoon (TSP)	Tip of your index finger	Postage stamp	Oils or fats
1 tablespoon (TBSP)	Thumb	Domino	Nut butter
3 ounces	Flat palm (average sized)	Deck of cards	Proteins like fish, poultry, and meats
½ cup	Scooped handful	Tennis ball	Grains
1 cup	Average sized fist	Baseball	Vegetables and fruits

Task:

Part I:

1. Navigate to <https://www.myplate.gov/myplate-plan> .
2. Enter your information to personalize your MyPlate plan. (If a student does not feel comfortable entering their information, please provide a scenario for them)
Tip: When you fill in all your information and press submit, click on the suggested number of calories displayed on the screen. Scroll down to view your personal recommendations. For more information on each food group, you can click the “Read More” link.
3. Using the information provided from your MyPlate plan, record your specific recommendations in the table below:

	Recommendation from MyPlate Plan	Examples of Foods in this category
Fruits		
Vegetables		
Protein		
Dairy		
Grains		

Part II:

1. Create three meals (Breakfast, Lunch, and Dinner) using the MyPlate format to satisfy your daily MyPlate recommendations. Note: Be sure that each of your meals has a minimum of three food groups represented.
 - Be sure to include portion sizes!
 - Feel free to include mixed foods and any cultural foods you might regularly consume.
 - Utilize the MyPlate website for meal and snack ideas.
 - You can add snacks. Snacks do not have to include a minimum of three food group components.

Example:

Meal: Breakfast

Description: Peanut Butter Oatmeal with Blueberries + 8 oz Glass of Nonfat Milk

	<i>Included?</i>	<i>Food Item</i>	<i>Amount</i>
<i>Fruits</i>	<i>Yes</i>	<i>Blueberries</i>	<i>1 cup</i>
<i>Vegetables</i>	<i>X</i>	<i>X</i>	<i>X</i>
<i>Protein</i>	<i>Yes</i>	<i>Peanut Butter</i>	<i>1 TBSP</i>
<i>Dairy</i>	<i>Yes</i>	<i>Nonfat Milk</i>	<i>8 oz</i>
<i>Grains</i>	<i>Yes</i>	<i>Old Fashioned Oats</i>	<i>1 cup cooked</i>

Meal:

Description:

	Included?	Food Item	Amount
Fruits			
Vegetables			
Protein			
Dairy			
Grains			

Meal:

Description:

	Included?	Food Item	Amount
Fruits			
Vegetables			
Protein			
Dairy			
Grains			

Meal:

Description:

	Included?	Food Item	Amount
Fruits			
Vegetables			
Protein			
Dairy			
Grains			

Optional Snack:

Description:

	Included?	Food Item	Amount
Fruits			
Vegetables			
Protein			
Dairy			
Grains			

Optional Snack:

Description:

	Included?	Food Item	Amount
Fruits			
Vegetables			
Protein			
Dairy			
Grains			

Reflection:

Identify two short term goals that can help you better align with your MyPlate recommendations.

- 1.
- 2.

Differentiation Tip: Give students the option to draw out their meals using the MyPlate format instead of filling out the tables. Additionally, you can opt to have students work in groups to plan the meals or have each student choose one meal to complete.

Sources:

1. MyPlate | U.S. Department of Agriculture. Accessed July 16, 2024. <http://MyPlate.gov>.
2. Blake JS. *Nutrition and You*. 6th ed. Pearson Education; 2022.
3. Ellis E. Serving size vs portion size: Is there a difference? Academy of Nutrition and Dietetics: eatright.org. December 18, 2018. Accessed July 16, 2024. <https://www.eatright.org/health/wellness/nutrition-panels-and-food-labels/serving-size-vs-portion-size-is-there-a-difference>.

Lesson 5: The Effect of Food Media on Eating Habits and Nutrition:

Information:

Energy dense foods provide more calories compared to the volume of the food. An example of an energy dense food is a chocolate donut. Conversely, nutrient dense foods provide more nutrients compared to the volume of the food. An example of a nutrient dense food is an apple. In the media, you often see energy dense foods marketed and many of those ads are targeted towards children. A 2017 study in New Zealand found that children were exposed to the marketing of energy dense foods twice as much as nutrient dense foods (Signal et al 2017). The top food items marketed included soda, fast food, sweets, and snacks (Signal et al 2017).

Show a commercial that markets an energy dense food to kids and adolescents. Look up the food label for that food and analyze the nutrient content of the food item.

Task:

Part I:

Working in groups, find 3 commercials or ads marketing food to children and/or adolescents. Put the links below:

- 1)
- 2)
- 3)

Answer the following questions for each commercial:

- 1) What product is being marketed?
- 2) Who is the intended audience for this commercial? Be specific about age and gender.
- 3) Look up the nutrition label for this product and record the following key nutrient values. Decide: Is this food **energy dense** or **nutrient dense**?

Nutrient	Nutrient Amounts Commercial 1	Nutrient Amounts Commercial 2	Nutrient Amounts Commercial 3
Saturated Fat			
Sodium			
Added Sugar			
Vitamin D			
Calcium			
Iron			
Potassium			

Part II:

Working in your groups, create a 1-2 minute commercial marketing a nutrient dense food that is served on your school's menu. This commercial should be designed to get students at your school excited about incorporating this into their eating pattern. Examples of foods include: nut butter, broccoli, sweet potatoes, grapes, etc. Get creative!

Reflection:

What do you think the impact on children's food choices would be of seeing nutrient dense foods marketed in the media?

Sources:

1. Signal, L.N., Stanley, J., Smith, M. et al. Children's everyday exposure to food marketing: an objective analysis using wearable cameras. *Int J Behav Nutr Phys Act* 14, 137 (2017).
<https://doi.org/10.1186/s12966-017-0570-3>
2. Blake JS. *Nutrition and You*. 6th ed. Pearson Education; 2022.

Lesson 6: Digging Into School Lunch

Information:

The National School Lunch Program was created in the 1940's, and today, it provides meals to over 30 million students on a daily basis. School menus are created according to the Dietary Guidelines for Americans and reflect the DRIs for each age group. (See Table 1)

Table 1:

Lunch Meal Pattern	Preschool	Grades K-5	Grades 6-8	Grades 9-12
	Amount of Food Per Week (minimum per day)			
Fruit (cups)	1 ¼ (¼)	2 ½ (½)	2½ (½)	5 (1)
Vegetable (cups)	1 ¼ (¼)	3¾ (¾)	3¾ (¾)	5 (1)
Dark green	N/A	½	½	½
Red/Orange		¾	¾	1¼
Beans, peas, & lentils		½	½	½
Starchy		½	½	½
Other		½	½	¾
Additional Vegetable to Reach Total		1	1	1½
Grain (oz. eq.)*	2 ½ (½)	8 (1)	8 (1)	10 (2)
Meat/Meat Alternate (oz. eq.)	7 ½ (1½)	8 (1)	9 (1)	10 (2)
Fluid Milk (cups)	3¾ (¾)	5 (1)	5 (1)	5 (1)
Other Specifications: Daily Amount Based on the Average for a 5-Day Week				
Minimum-maximum calories (kcal)	N/A	550 - 650	600 - 700	750 - 850
Saturated fat (% of total calories)	N/A	< 10	< 10	< 10
Sodium Target 1a (mg)	N/A	≤ 1110	≤ 1225	≤ 1280

Image Source: <https://snp.gadoe.org/Programs/Pages/Lunch.aspx>

School lunches are provided in an offer vs serve manner. What this means is that at every lunch service, all five food groups must be **offered**. This allows students to choose which food items end up on their tray. For a meal to be complete and reimbursable, students must select three of the five food groups offered AND one of those choices must be a fruit or a vegetable.

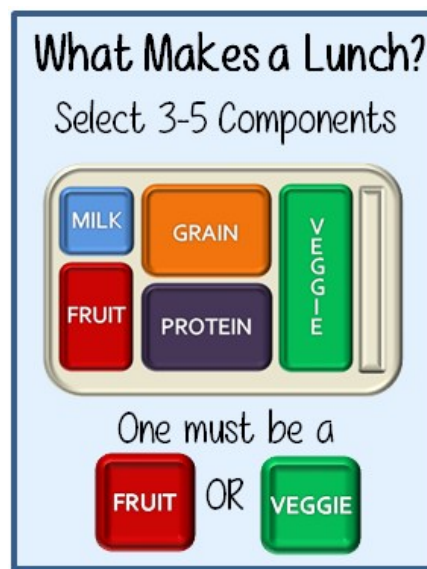


Image Source: <https://www.pisd.us/page/reimbursable-meal>

Task:

Part I:

Investigate and identify what the least selected food group is during a lunch period. This can be done by observation, by conducting a survey, interviewing the lunch staff, etc.

Food Groups:

- Fruits
- Vegetables
- Grains
- Protein
- Dairy

Part II:

Work in groups of 2-4 to create a new school menu item highlighting a food from the least selected food group. This menu item should be designed to appeal to students and make them more likely to select the food. Note: it would be advised to meet with your School Nutrition manager to understand cost parameters and food availability!

Part III:

Present your menu item proposals to the nutrition staff at their school. Ideally, one of the menu items can be featured on an upcoming menu!

Reflection:

1. What do you see as benefits of the offer vs serve system? What do you see as disadvantages?
2. Through this process, what did you learn about school nutrition?

Sources:

1. National School Lunch program factsheet. Food and Nutrition Service U.S. Department of Agriculture. Accessed July 16, 2024. <https://www.fns.usda.gov/nslp/nslp-fact-sheet>.
2. Lunch Meal Pattern Chart. Georgia Department of Education School Nutrition. 2024. Accessed July 16, 2024. <https://snp.gadoe.org/Programs/Pages/Lunch.aspx>.
3. Pleasanton Independent School District. What is a Reimbursable Meal? 2024. Accessed July 16, 2024. <https://www.pisd.us/page/reimbursable-meal>.

Special Thanks for Marietta City Schools!

REFERENCES FOR LITERATURE REVIEW:

1. Hayes D, Contento IR, Weekly C. Position of the Academy of Nutrition and Dietetics, Society for Nutrition Education and Behavior, and School Nutrition Association: Comprehensive Nutrition Programs and Services in Schools. *J Acad Nutr Diet*. 2018;118(5):913-919. doi:10.1016/j.jand.2018.03.005
2. USDA. (2020, December). Dietary Guidelines for Americans 2020-2025. https://www.dietaryguidelines.gov/sites/default/files/2020-12/Dietary_Guidelines_for_Americans_2020-2025.pdf
3. Centers for Disease Control and Prevention. (2022, May 17). *Childhood Obesity Facts*. Centers for Disease Control and Prevention. <https://www.cdc.gov/obesity/data/childhood.html>
4. Sanyaolu A, Okorie C, Qi X, Locke J, Rehman S. Childhood and Adolescent Obesity in the United States: A Public Health Concern. *Glob Pediatr Health*. 2019;6:2333794X19891305. Published 2019 Dec 1. doi:10.1177/2333794X19891305
5. Smith JD, Fu E, Kobayashi MA. Prevention and Management of Childhood Obesity and Its Psychological and Health Comorbidities. *Annu Rev Clin Psychol*. 2020;16:351-378. doi:10.1146/annurev-clinpsy-100219-060201
6. Medeiros GCBS, Azevedo KPM, Garcia D, et al. Effect of School-Based Food and Nutrition Education Interventions on the Food Consumption of Adolescents: A Systematic Review and Meta-Analysis. *Int J Environ Res Public Health*. 2022;19(17):10522. Published 2022 Aug 24. doi:10.3390/ijerph191710522
7. Silveira JA, Taddei JA, Guerra PH, Nobre MR. The effect of participation in school-based nutrition education interventions on body mass index: a meta-analysis of randomized controlled community trials. *Prev Med*. 2013;56(3-4):237-243. doi:10.1016/j.ypmed.2013.01.011 <https://pubmed.ncbi.nlm.nih.gov/23370048/>
8. Miller M, Barwood D, Devine A, Boston J, Smith S, Masek M. Rethinking Adolescent School Nutrition Education Through a Food Systems Lens. *J Sch Health*. 2023;93(10):891-899. doi:10.1111/josh.13351
9. Fahlman, M, McCaughtry N, Martin J, Shen B. School health educator's self-efficacy, intentions to teach, and implementation of nutrition education increases after in-service training. *Am J Health Educ*. 2011;42(3):181-190
10. Meiklejohn S, Ryan L, Palermo C. A Systematic Review of the Impact of Multi-Strategy Nutrition Education Programs on Health and Nutrition of Adolescents. *J Nutr Educ Behav*. 2016;48(9):631-646.e1.
11. Murimi MW, Moyeda-Carabaza AF, Nguyen B, Saha S, Amin R, Njike V. Factors that contribute to effective nutrition education interventions in children: a systematic review. *Nutr Rev*. 2018;76(8):553-580. doi:10.1093/nutrit/nuy020
12. Jones AM, Zidenberg-Cherr S. Exploring nutrition education resources and barriers, and nutrition knowledge in teachers in California. *J Nutr Educ Behav*. 2015;47(2):162-169. doi:10.1016/j.jneb.2014.06.011