Introduction

In this lesson, students will study the benefits of using credible resources to assist with monitoring food intake, setting realistic goals, and improving healthy eating habits.

Purpose

The student will be able to use interactive websites and resources in order to create a healthier meal plan. Students will also monitor food intake and discuss concepts associated with the reliability and validity of their measurements.

Objectives

At the end of this lesson, students will be able to:

1. Monitor food intake over a specified period
2. Analyze nutritional values of food intake
3. Distinguish between scales of measurement
4. Understand concepts relating to the credibility of measurement, specifically reliability and validity
5. Develop a plan to enhance healthy eating habits

Key Terms

1. Nominal scale: level of measurement, with no implied order, in which names or labels are used for certain characteristics (e.g. male and female).
2. Ordinal scale: level of measurement in which categories are ordered, but there is no measure of the degree of difference between categories (e.g. the results of a horse race: first place, second place, third place, etc.)
3. Interval scale: level of measurement in which there are equal intervals between numbers and the “zero point” is arbitrary and negative numbers can be used (e.g. temperature)
4. Ratio scale: level of measurement in which ratios can be used in comparing scores, and it is possible to measure a true zero point (e.g. weight)
5. Reliability: similarity of scores across multiple administrations of a test or measure
6. Validity: the extent to which inferences based on scores are appropriate and meaningful
National and State Standards

National
Science 5-8.1; 9-12.1
Health 5-8.2 through 5-8.7; 9-12.2 through 9-12.7

Virginia
Science 6.1 b, e, f
LS.1 e
PS.1 g – k
BIO.1 a, e, f

Materials

- Internet access
- Laptop
- LCD projector

Procedures

Day 1:
1. Visit www.choosemyplate.gov and review the new USDA “choose my plate” guidelines with the students.
2. Explain procedures for itemizing today’s food consumption using the attached food intake record.
   a. Direct students to write down what they have eaten so far during Day 1 and continue through the end of the day.
   b. Remind students to bring their completed Food Intake Record to the next class.

Day 2:
1. Explain how to access Food-a-pedia (https://www.supertracker.usda.gov/foodapedia.aspx) or a similar website.
2. Ask students to look up and record the caloric values for the food items in their logs.
3. Create a sample meal description (e.g. a peanut butter and jelly sandwich with a glass of milk) that you will describe to the class. This description should not include specific details about serving size, food brands, etc. Have all students calculate the total caloric value of this meal.
4. Ask students to share the total caloric value they calculated for the sample meal described in step 3.
5. Prompt a classroom discussion about reasons for differences in the students' total values by asking them why they think they might have calculated different caloric values for the same meal. Consider different interpretations of portion size, type of bread, etc.

Day 3:

1. Explain how to access the USDA SuperTracker Food Tracker. ([https://www.supertracker.usda.gov/foodtracker.aspx](https://www.supertracker.usda.gov/foodtracker.aspx))
2. Have the students enter food items from Day 1’s Food Intake Record in the Food Tracker and click on the “Nutrient Intake Report” link to compare their nutrient and caloric intake to the target values in the report.
3. Ask students to write a summary of their personal findings related to their eating habits including three healthy suggestions to improve their own food choices.
4. Assign homework: The students will write a personal meal plan based on the USDA SuperTracker Food Tracker recommendations using a blank the Food Intake Record
5. Collect the revised meal plan and summary.
6. Assess summary and provide feedback as needed.

Observations and/or Data

Observed eating habits will be recorded using the Food Intake Record sheets.

Analysis and Conclusions

1. What are the basic food groups?
2. What are some of the features or characteristics of a healthy meal plan?
3. Which food group(s) should be eaten in moderation?
4. What factors contribute to differences in total caloric values? How might these differences influence an individual's health?

Critical Thinking Questions

Which is more important, validity or reliability? (Hint: This is a trick question. Scores must be reliable in order to be valid.)

Teacher Notes

Tips

Hints: When discussing healthy eating, it is important to gather information from students about their preconceived ideas of healthy habits.
**Teacher Set-Up:** The teacher should provide background information about basic food groups and the USDA “choose my plate” guidelines. Preview the YouTube video [http://www.youtube.com/watch?v=dZ49FuUpxnE](http://www.youtube.com/watch?v=dZ49FuUpxnE) and written guide [https://www.supertracker.usda.gov/userguide.aspx](https://www.supertracker.usda.gov/userguide.aspx)

The teacher should also familiarize students with Food-a-pedia at [https://www.supertracker.usda.gov/foodapedia.aspx](https://www.supertracker.usda.gov/foodapedia.aspx).

**Recommended Assessment Techniques:** After analyzing their daily food choices using the USDA SuperTracker Food Tracker, students will write a revised meal plan and summary of personal eating habits, using peer suggestions. The summary is assessed and is acceptable if the student can give three healthy food suggestions to improve their own food choices.

**Safety Notes**

Make sure all students are following proper classroom safety guidelines.

**Background Information**

All Virginia State standards for science involve utilization of inquiry throughout the first objective. Mini lessons can be created around many of the Nature of Science Skills.

In January 2011, the United States Department of Agriculture (USDA) announced the release of the 2010 Dietary Guidelines for Americans. This is the 7th edition of Dietary Guidelines for Americans and places greater emphasis on reducing calorie consumption and increasing physical activity than previous editions. The new guidelines are found at [www.choosemyplate.gov](http://www.choosemyplate.gov).

Visit [http://www.choosemyplate.gov/print-materials-ordering.html](http://www.choosemyplate.gov/print-materials-ordering.html) for resource materials. Some recommended items from this list are:

- Getting Started with My Plate
- Dietary Guidelines Consumer Brochure
- Sample Menus and Recipes

**Prerequisite Skills and Knowledge:** Students should have a basic understanding of the basic food groups, and they should be able to utilize interactive websites. Serving size is a standardized amount of a food used to compare similar foods. It is usually listed in common measurements, such as 1 cup or 1 ounce. Often, the serving size differs from the contents of the food package. For example, one serving of soda equals one cup (eight fluid ounces); however, the typical can of soda contains 12 fluid ounces. Thus, a can of soda is usually 1.5 serving sizes.
Resources
USDA SuperTracker Food Tracker and Food-a-pedia.com found at https://www.supertracker.usda.gov/default.aspx

For the Teacher: USDA SuperTracker Help resources at https://www.supertracker.usda.gov/help.aspx

Extensions

Classroom
Students can utilize the two worksheets in this lesson, as well as visit www.freshhealthyvending.com/wp-content/uploads/2010/08/food-label-example.gif to read food labels and examine the caloric/nutritional values of the foods they have at home. Then, they can then make a daily/weekly food plan, possibly discussing the exercise with their parents and choosing healthy substitutes for future grocery shopping.

Cross-Curricular
There are additional activities that can enhance this lesson and/or modifications to make the activity appropriate for students of different ages and abilities, as well as adaptations for Exceptional Education.
Name: 

**Food Intake Record**

For (date): _____________________________

Directions: Record the food that you have eaten today, starting with breakfast, then continue to record what you eat for the rest of the day. Try to be as accurate as possible with the type of food eaten and the amounts. List each food separately.

For example: a peanut butter and jelly sandwich would be listed as follows:

<table>
<thead>
<tr>
<th>Meal</th>
<th>Food</th>
<th>Amount</th>
<th>Food Group</th>
<th>Servings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lunch</td>
<td>Peanut Butter</td>
<td>2 tablespoons</td>
<td>Meat</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Jelly</td>
<td>2 tablespoons</td>
<td>FOS</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Bread-white</td>
<td>2 slices</td>
<td>Breads, Cereals, Pasta</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Milk</td>
<td>1 cup</td>
<td>Dairy</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Apple</td>
<td>1 medium</td>
<td>Fruit</td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Meal</th>
<th>Food</th>
<th>Amount</th>
<th>Food Group</th>
<th>Servings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Breakfast</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lunch</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dinner</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Snack</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Peer Review Checklist

Record your nutrient intake in the column title “Yours” from the SuperTracker Food Tracker Nutrient Intake Report page. Have your partner place a checkmark in the column title “Minimum Requirements” if you met the minimum requirements.

<table>
<thead>
<tr>
<th>Nutrient</th>
<th>Recommended</th>
<th>Yours</th>
<th>Minimum Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calories (kcal)</td>
<td>2200</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Protein (g)</td>
<td>50 g</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Carbohydrates (g)</td>
<td>300 g</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dietary Fiber (g)</td>
<td>25 g</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Fat (g)</td>
<td>No more than 30% of total calories</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Saturated Fat (g)</td>
<td>No more than 10% of total calories</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cholesterol (mg)</td>
<td>300 mg</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vitamin A (RE)</td>
<td>700 RE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vitamin C (mg)</td>
<td>75 mg</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Calcium (mg)</td>
<td>1200 mg</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Iron (mg)</td>
<td>8 mg</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sodium (mg)</td>
<td>&lt;=2400 mg</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>