

“Make Change” With Dairy

Educate students about dairy’s superior nutritional and economic value, and empower them to make smarter snack choices



INTRODUCTION

The *Make Change* lesson plan from Midwest Dairy Council consists of two 30- to 45-minute lessons, along with two optional activities. The information and activity outline are designed to educate tweens and teens about the importance of healthy snacking from nutritional and economic perspectives, and empower students to take action for their health.

The course plan can be implemented in either a kitchen-oriented setting, such as a Family & Consumer Science classroom, or in a class discussion.

Lesson Objective

Empower students to “make change” in their diets and wallets by adjusting their snacking behavior to choose nutrient-rich, cost-saving snacks over empty-calorie, more costly alternatives.

- After taking this lesson, students will:
 - Be aware of the essential nutritional benefits of milk, cheese and yogurt
 - Understand key nutrients and how they contribute to overall health and wellness
 - Know how to read a nutrition fact label and understand what it means
 - Be introduced to cost differences among various snacks
 - Make informed decisions when selecting snacks based on both nutritional and economic value of foods

Strategies

- Educate students about the nutritional value of dairy
- Teach students what they should look for when choosing snacks
- Utilize food comparisons to demonstrate how students receive more nutritional value in dairy foods than in some other snacks
- Provide students with a hands-on activity where they learn how to create scrumptious snacks with excellent nutritional value that don’t empty their wallets
- Provide educators a fun tool to activate other programs, such as *Fuel Up to Play 60*, a student-led national health and fitness program sponsored by the National Dairy Council and the National Football League (www.fueluptoplay60.com)

Materials

- PowerPoint presentation
- Activity materials (see below)

Activity Materials

- Nutrition Facts Label Worksheet
- Cow-culator Nutrition and Cost Comparisons
 - Internet terminals (optional)

Optional Activities

- “Snack Savvy Chef Challenge” Activity
 - Various snack foods including milk, various cheeses, yogurt, bread, crackers, veggies, etc.
 - List of nutritional properties/criterion they would have to research
 - Access to internet/store to price foods
- Nutrient-Rich Recipe Book Activity
 - Folders/binders
 - Paper for recipes
 - Computer or copy machine

Schedule

- **Lesson One:** Get All the Facts
 - 30 – 45 minutes
- **Lesson Two:** Make Change
 - 30 – 45 minutes
- **Optional Activities:** Put it Into Practice

Instructor Notes

- At the beginning of each lesson are Instructor Notes. These are for your use in preparing and presenting the lesson.
- *Instructor Notes are in italics*; normal font text represents content to be presented in class.
- The following icons appear throughout the instructor guide to indicate the *general type of activity* involved in that portion of the lesson.



Instructor presentation



Activity



Discussion

“Get All the Facts”

Taking a closer look at nutrition facts labels

Lesson I:

30 – 45 minutes

Instructor Notes

The purpose of this lesson is to help students learn how to read a nutrition label and determine if the snack food and beverage choices they are making are nutritious. By reviewing the nutrition label, students will also gain an understanding of serving sizes, which is an important factor to consider when consuming snacks and beverages. Students will also learn about what nutrients they should try to limit and what nutrients they should focus on for a healthy, balanced diet.

Lesson content will focus on:

- *Learning how to read a nutrition label*
- *Understanding the key information to look for on a nutrition label before consuming snacks and beverages*
- *What nutrients to limit and what nutrients to consume for a healthy diet*



Pre-activity Assignment: *Ask students to bring in their favorite snack and beverage packages to review the nutrition labels. Also, have them determine what the cost of that snack or beverage is and come prepared to discuss this information.*



Nutrition Facts Label Overview

- I. Understanding the Importance of a Serving Size
 - a. The serving size is the first thing listed on the label. This allows you to determine the amount of calories and nutrients in one serving of food or beverage.
 - b. The label gives both the serving size and number of servings in the package.
 - c. The serving size (amount for one serving) on the label is not necessarily all the food or beverage in the container.
 - d. Serving sizes may not be the amount commonly eaten. Some serving sizes can be very small (for example, 3 crackers or 1 oz of chocolate) so be sure to compare your portion to a serving size on the label. If a label states a serving size is 1 cup and you drank 2 cups, you consumed twice the amount of calories and other nutrients listed.
 - Example: 20 oz of Cola is 2.5 servings!



Ask students to share their own experiences about what types of beverages and snacks they typically consume and how much. Have students examine their snack/beverage package to determine how many servings are in the package.



II. Determining the Number of Calories and Total Fat

a. Calories

- The number of calories in a single serving of food is listed at the top of the label, just under the serving size information.
- This number tells you the amount of energy in the food.

b. Total Fat

- The grams of fat in a single serving of food are listed right below the calories.
- Fat is an important nutrient that our bodies use for development, but you shouldn't eat too much.
- There are different kinds of fat, such as saturated, trans fat, unsaturated and they are listed separately on the label.



Ask students to review their nutrition facts labels and share how many calories are in each serving. Determine what snacks are high in calories and what snacks are low in calories.

III. Examining the Nutritional Make-up of a Snack or Beverage

a. Of all the nutrients in food, only a few are listed on the label — those that relate to today's most important health issues.

b. Most nutrients are measured in grams, also written as **g**. Some nutrients are measured in milligrams, or **mg**. Milligrams are very, very small — there are 1,000 milligrams in 1 gram.

c. Daily values are based on a 2,000 kcal diet. Individual needs may be higher or lower depending on caloric needs.

d. There are two types of Dietary Values. Some, like fiber, protein, vitamins and most minerals, suggest an intake goal to obtain. Below that level and needs may be unmet. Other Daily Values constitute healthy daily maximums. These include cholesterol, total fat, saturated fat and sodium. Since there are so many variables with individual diets, Daily Values are most useful for comparing one food with another.

e. We should try to consume a variety of foods that add up to 100% of our Daily Value of the following nutrients:

- **Fiber** aids in digestion
- **Vitamin A** improves night vision.
- **Vitamin C** heals cuts and bruises.
- **Calcium** helps build and maintain strong bones and teeth.
- **Iron** carries oxygen in the blood.

f. We should try to limit our intake of the following products to 100% of our daily recommended allowance or less: Fat, Saturated Fat, Trans Fat, Cholesterol and Sodium. Eating too much of these nutrients may increase your risk for certain chronic diseases, like heart disease, some cancers or high blood pressure.



IV. What Does Percent Daily Value Mean?

- a. The Percent Daily Value (DV) is based on the DV recommendations for key nutrients for a 2,000 calorie-a-day diet, which is the recommended caloric intake for adults.
- b. Be aware that 100% DV may or may not be the optimal amount recommended for you. Depending on your age, gender and activity level, you may need more or less than 100% DV. Visit www.mypyramid.gov for more specific information.
 - For example, on food labels, the DV for Calcium is 1,000 milligrams, the Dietary Reference Intake (DRI) recommended for adults up to fifty. However, teens are urged to consume 1,300 mg of calcium daily, and for adults over fifty, the advice is 1,200 mg daily.
- c. The Percent DV helps you determine if a serving of food is high or low in a nutrient.
 - 5% DV or less is low and 20% DV or more is high.
- d. The Percent DV makes it easy for you to compare products to determine which one offers more nutrients.



Have students review their nutrition facts labels and share how key findings. Questions to ask to facilitate discussion: Does anyone have a snack that has more than 20% of the Daily Value for any of the key nutrients? Does anyone have a snack or beverage that has more than 20% of the Daily Value for calcium? Why is this a good snack?



V. Is Your Snack a Nutritional and Economical Value?

- a. Determining Cost Per Serving
 - Understanding cost per serving helps us determine if a snack is an economical source of nutrition.
 - Many snacks and beverages, such as candy bars and sodas, might be expensive and might not deliver as many nutrients as a less-expensive option such as an apple or mozzarella stick.



ACTIVITY: Snack and Beverage Nutrition Facts Label Worksheet

In this activity, students will analyze their snack food or beverage labels and graph the percentage of nutrients they are consuming with that snack and how it measures up to the overall Daily Value. Students will compare and discuss this information and determine if their snacks and beverages are a good source of nutrition. At the end of the lesson, students will be armed with the knowledge to read and understand a nutrition label so they can make smart choices about the food they consume.

Step 1: Distribute the nutrition facts label worksheets (available at Dairymakesense.com). Ask students to take a close look at the nutrition facts label of their snack or beverage and fill in the nutrition facts label on the worksheet.

Students should complete this section of their worksheet. →

Nutrition Facts

Serving Size _____	
Servings Per Container _____	
Amount Per Serving	
Calories _____	Calories from Fat _____
_____ %Daily Value	
Total Fat _____ g	_____ %
Saturated Fat _____ g	_____ %
Trans Fat _____ g	_____ %
Cholesterol _____ mg	_____ %
Sodium _____ mg	_____ %
Total Carbohydrate _____ g	_____ %
Dietary Fiber _____ g	_____ %
Sugars _____ g	_____ %
Protein _____ g	_____ %
Vitamin A _____ %	• Vitamin C _____ %
Calcium _____ %	• Iron _____ %
Vitamin D _____ %	

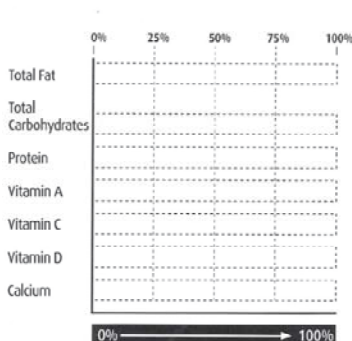
*Percent Daily Values are based on a 2,000 calorie diet. Your Daily Values may be higher or lower depending on your calorie needs.

	Calories	2,000	2,500
Total Fat	Less Than	65g	80g
Sat Fat	Less Than	20g	35g
Cholesterol	Less Than	300mg	300mg
Sodium	Less Than	2,400mg	2,400mg
Total Carbohydrate		300g	375g
Dietary Fiber		25g	30g



Ask students questions to facilitate a discussion. Potential questions: Did anyone have a snack that had just one serving? Two servings? Who had a snack that was high in calcium? Who had a snack that was high in fiber?

Step 2: Now let's graph the nutritional value to determine how this snack or beverage will contribute to our overall daily nutritional needs. This is where you'll see if your drink has little or many nutrients. These percentages give you a general idea of how one serving contributes nutritionally your daily diet requirements.



← Students should chart their nutrients on this chart.

Step 2 (continued)



Ask students to raise their hands if they believe their snack or beverage is a good source of nutrients. Ask students to share their findings and any key learnings.

Step 3: Now determine how much our snack or beverage costs per serving.



Have students calculate the cost per serving of their snack or beverage and discuss the findings. To calculate cost per serving, students should follow these steps:

- 1. Take the cost of the snack or beverage*
- 2. Divide by the number of servings in the package*
- 3. This will be the cost per serving*

Discuss the estimated cost per serving for each to reinforce the concept of getting a nutritional return on the investment.

“Make Change”

Understanding the nutritional and economic value of snacks

Lesson 2:

30 – 45 minutes

Instructor Notes

The purpose of this lesson is to get a better understanding of students’ current knowledge of nutrition and how it contributes to health and wellness. Students also are to begin evaluating their snack choices and how they can choose snack foods with more nutritional and economic value. By reviewing nutritional and cost comparisons of common snacks, students will gain an understanding of what nutrients they should look for in a snack and how common snacks compare both nutritionally and economically.

Lesson content will focus on:

- *Facts on health consciousness and snacking trends*
- *Providing an overview of important nutrients and ideas and tips for choosing snacks with nutritional value*
- *Comparing the nutritional and economic value of common snacks with dairy products*



Dairy and Nutrition

- I. Hectic school-year schedules can cause students to miss out on key nutrients. Dollar for dollar, dairy foods, such as milk, cheese and yogurt, are a better choice than popular, empty-calorie snacks and drinks.
 - a. A new report says children consume 30% of America’s snack foods, including candy, candy bars, potato chips and gum. (NPD Group’s ‘Snacking in America 2008’, www.npd.com)
 - b. A study found that 84% of teens sip an extra 356 calories daily from sugar-sweetened beverages, contributing to more calories than any food group in their diet. ([Pediatrics](#), June 2008; Archives of Pediatrics and Adolescent Medicine, June 2008)
 - c. According to the American Academy of Pediatrics report on calcium, children need three servings of dairy foods daily and adolescents need four servings daily to meet calcium recommendations. (*Optimizing bone health and calcium intakes of infants, children and adolescents. Pediatrics. 2006; 177(2):578-585*)



Ask students to share their own experiences and knowledge of snacks they commonly eat after school, before or after sports practice, etc.

- II. Common Snacks and Drinks
 - a. Protein Bars, 100-Calorie Snacks, Sports Drinks, Soda
 - Discuss the nutritional value of these items (nutritional comparison guides for these snacks are available in the Make Change educator toolkit at Dairymakessense.com)



III. Important Nutrients in Dairy Foods

- a. **Calcium** helps build and maintain strong bones and teeth.
- b. **Potassium** helps regulate fluid balance and blood pressure.
- c. **Phosphorus** helps strengthen bones and teeth.
- d. **Protein** builds strong muscles
- e. **Vitamin A** improves night vision.
- f. **Vitamin D** Helps body absorb calcium.
- g. **Vitamin B₁₂** is needed for normal growth.
- h. **Riboflavin (B₂)** helps cells use oxygen to release energy from food.
- i. **Niacin** (niacin equivalents) helps cells use oxygen to release energy from food.

IV. **Milk**, Cheese and Yogurt Nutrition and Economic Value Highlights

- a. The 2005 Dietary Guidelines for Americans and MyPyramid set up a foundation for a healthy diet and encourage adults and kids 9 years and over to enjoy three servings of low-fat or fat-free dairy foods each day.
- b. **Milk** is one of the most economical sources of high-quality protein (protein can be one of the most expensive parts of the diet) and calcium, which are important for the growth and development of bones and teeth. Milk provides one of the richest sources of well-absorbed calcium in the American diet.
 - While some beverages claim to deliver as much calcium, milk is a natural carrier of calcium. Fortified beverages like orange juice and soy beverages have to be shaken to put the calcium back into the solution/liquid — otherwise the calcium sits at the bottom of the carton.
 - Milk is about 30% less expensive (per serving) than fortified orange juice.*
 - At about 25 cents per serving, an 8-ounce glass of milk is one of the best beverage bargains available.
 - Milk is a good or excellent source of nine essential nutrients: calcium, potassium, phosphorus, protein, vitamins A, D and B₁₂, riboflavin and niacin (niacin equivalents).
 - Milk is an excellent source of calcium, phosphorus, vitamin D and riboflavin because it contains these nutrients at 20% or more of the Daily Value.
 - Milk is a good source of potassium, protein, vitamin A, vitamin B₁₂ and niacin (niacin equivalents) because the levels are between 10% and 19% of the Daily Value.
 - Milk protein is a high-quality protein containing all the essential amino acids the body needs.

** All costs are approximate as of May, 2009 and may vary with retailer and geographic region. Verify this stat at local retailer to ensure information is accurate and up to date.*

- c. **Hard Cheeses, like cheddar**, contain 8 grams of protein per ounce.
 - Many cheeses are excellent sources of calcium, providing 20-25% of the Daily Value.
 - Many cheeses are good sources of phosphorus and protein, providing between 10 and 19% of the Daily Value.
- d. **Yogurt** can deliver nearly a third of your daily calcium needs in just one 8-ounce serving.
 - Most 8 ounce servings of yogurt varieties are excellent sources of calcium, phosphorus and riboflavin, and good sources of protein and potassium.

V. Milk, Cheese and Yogurt Nutrition Comparisons:



- a. It takes three cups of broccoli to equal the calcium in one cup of milk.



- b. An 8-ounce serving of low-fat plain yogurt contains 490 milligrams of potassium; about the same as a small banana.



- c. One ounce of hard cheese (like cheddar) contains 8 grams of protein; an egg contains 6 grams.

Nutrient-Rich Foods

- VI. The best way to stretch nutritional dollars is to consume more **nutrient-rich foods** and avoid empty-calorie foods that provide little or no nutrition, often at a higher cost.
 - a. Many sodas and fruit drinks are high-calorie, expensive and don't help the wallet.
 - b. Drinkable yogurts and flavored milks are excellent choices over sports drinks or sodas because they fuel your body and bones with nine essential nutrients. Sodas and energy drinks have very little.

Nutrient-Rich Foods

“Nutrient-rich” is a term used to describe a food or beverage that provides a substantial amount of nutrients per calorie — such as colorful fruits and vegetables, enriched and whole grains, lean meats and low-fat and fat-free dairy foods. Rather than just focusing on the negative – what a food doesn't contain – this is a positive, balanced and complete way of choosing foods. Since nutrient-rich foods are familiar and easy to find, healthy eating isn't difficult or stressful.

For more information on nutrient-rich foods, visit *midwestdairy.com* and *nutrientrichfoods.org*.



ACTIVITY: Cow-culator Nutrition and Cost Comparisons

This activity is suitable for both online and offline teaching environments. Visit Dairymakessense.com and click on the “Quiz” link to conduct this activity online.

Take a trip to Bessie the Cow’s market and test your grocery shopping IQ. The objective of the activity is to identify key nutrients for each snack, as well as which item provides the most nutritional bang for the buck!



Distribute sample comparison guide handouts (available at Dairymakessense.com) and ask students to discuss and compare each snack pairing for nutritional content. Then discuss the estimated cost per serving for each to reinforce the concept of getting a nutritional return on the investment.

Following the comparison discussion:

- 1) Conduct verbal quiz/discussion with the comparison questions outlined below
- 2) Use downloadable quiz from Educator toolkit on Dairymakessense.com
- 3) Have students take online “Quiz” with Bessie Cow-culator at Dairymakessense.com

Comparison Questions:

#1 – Cheese stick vs. 100-calorie cookie/cracker snack pack

- Question: What percent of your daily recommended calcium needs does each snack provide?
 - Answer: Cheese stick = 20 percent; snack pack = <2 percent
- Question: Which item provides the most protein?
 - Answer: Cheese stick (15 percent vs. 2 percent)
- Question: What is the estimated per unit cost for each item?
 - Answer: Cheese stick = \$.33; snack pack = \$.50

#2 – Yogurt vs. protein bar

- Question: Which item provides the most calcium?
 - Answer: Yogurt (34% vs. 20%)
- Question: Which item provides the most protein?
 - Answer: Yogurt (20% vs. 13%)
- Question: What is the estimated per unit cost for each item?
 - Answer: Yogurt = \$.61; protein bar = \$1.39

#3 – Milk vs. calcium-fortified orange juice

- Question: What percent of your daily recommended calcium needs does each snack provide?
 - Answer: Milk = 30%; fortified orange juice = 35%
- Question: Which item provides the most phosphorus?
 - Answer: Milk (23% vs. 0%)
- Question: What is the estimated per unit cost for each item?
 - Answer: Milk = \$.25; fortified orange juice = \$.38

#4 – Macaroni & cheese vs. Spaghetti-Os[®]

- Question: Which item provides the most protein?
 - Answer: Macaroni & cheese (24% vs. 14%)
- Question: What is the estimated per unit cost for each item?
 - Answer: Macaroni & cheese = \$.35; Spaghetti-Os[®] = \$.54

#5 – Chocolate milk vs. sport drink

- Question: Which item provides the most potassium?
 - Answer: Chocolate milk (12% vs. 1%)
- Question: Which item provides the most protein?
 - Answer: Chocolate milk (16% vs. 0%)
- Question: What is the estimated per unit cost for each item?
 - Answer: Chocolate milk = \$.25; sports drink = \$.30



At this time, students will begin to understand what nutrients to look for in a snack and why nutrient-rich foods are important. They also will gain an understanding of why some foods are a better economic value and provide more bang for the buck.

Optional Activities

Putting nutrition and economic knowledge into practice

Timing

30 – 45 minutes (per activity)

Instructor Notes

In these two optional activities, students will apply the information they reviewed in the previous sessions. With their toolbox of dairy nutrition and economic information, students will develop recipes and/or create snacks with a better understanding of the nutritional and economic value. Students will then be armed with the basic information they need to make smart decisions when it is time for serious snacking.



Activity Option 1: SNACK SAVVY CHEF CHALLENGE

In this activity, students will prepare snacks from provided foods they believe will not only be nutritionally valuable, but economically wise as well. The objective is for students to create a snack and beverage combination that delivers both economic and nutritional value.

Step 1: Create a buffet table of snacks, snack ingredients and beverages. Examples may include: milk, yogurt, cheese, granola, chips, chocolate, crackers, cookies, candy, popcorn, sodas, sports drinks, juices, water, fruits, lunch meats, vegetables, salad dressings, etc.

Step 2: Record nutritional information from the labels (when relevant) for the snack items used in the activity. Also include estimated per serving cost. See example nutrition facts form at the end of this section. (*Option: Prior to lesson, have students bring in samples of food and snack labels for discussion.*)

Step 3: After introducing the concept of the activity and its objective, split the class into small culinary teams. These teams will create tasty, fun snack and beverage combinations and then evaluate the nutrient contribution and cost of the creation.

Step 4: Break the team portion of the activity down into three steps with the appropriate time allotted to each based on the length of the period:

- **Brainstorming:** Based on the available ingredients, have the teams brainstorm potential snack creation and beverage combination ideas.
- **Recipe development:** Give the teams a time limit to create their snack and accompanying beverage.
- **Evaluation:** Allow each team to present their creation, with special emphasis to the nutritional elements, as well as estimate total cost per serving. Enjoy the snacks while cleaning up.

Step 5: Follow-up discussions regarding the economic and nutritional value of each snack and beverage combination.

Nutrition Fact Form

	% Daily Value
Calories	%
Total Fat	%
Cholesterol	%
Sodium	%
Carbohydrates	%
Sugar	%
Fiber	%
Protein	%
Vitamin A	%
Calcium	%
Vitamin C	%
Iron	%
Other (on the label if added or significant amount)	%



Activity Option 2: NUTRIENT-RICH RECIPE BOOK

In this activity, students will conduct online recipe research about nutrient-rich snacks and prepare recipes illustrating nutritional and economic value. Students will compare and discuss this information, and recipes will then be compiled and shared. At the end of the lesson, students will be armed with a number of recipes to start making smart snacks!

Reminder: A single 8-ounce dairy serving provides essential daily nutrients that Americans miss most, including calcium, potassium, magnesium and vitamin A.

Step 1: Discuss with the class the importance of both nutritional and economic value in the snacks they eat. Prior to recipe brainstorming, ask the class to consider previously discussed key nutrients, including:

- Calcium
- Potassium
- Phosphorus
- Protein
- Vitamin A
- Vitamin D
- Vitamin B₁₂
- Riboflavin (B₂)
- Niacin (niacin equivalents)

In addition to these recommended nutrients, ask the students to consider the estimated cost for the recipes to drive home the importance of stretching their snack dollar.

Step 2: After introducing the concept of the activity and its objective, use the Internet, recipe books and other resources to inspire ideas. *This can be an in-class activity or homework assignment. (Option: Break the class into small teams or pairs instead of individuals for the recipe development activity.)*

Step 3: Have each student/team name and present their recipe to the class. Each recipe should pay special attention to the key nutrients the recipe helps deliver.



Step 4: Conduct follow-up discussions regarding the economic and nutritional value of each recipe. Provide ideas to the students on ways the snack could be altered to boost the nutritional value and/or lower the cost per serving.

Step 5: Have each student/team submit their snack recipe and create a bound recipe booklet for everyone in the class. *(Option: Have the students create their new recipes in a subsequent lesson to share and discuss.)*