Topic: Breads and Nutritional Labels

Make your own nutritional label, and compare and contrast types of bread.

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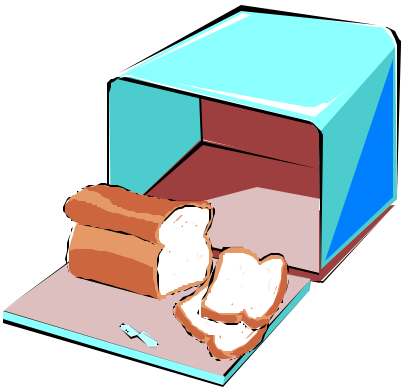
An Integrated Lesson Plan
Covering three sessions
of one hour each



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Lesson-Planning Approach

Students do not learn from what <u>you</u> do but from what you have <u>them</u> do.

Some learners perceive their "world" as a whole, where all things are interconnected and dependent upon each other. These "integrated" students face major challenges in coping with our dominant educational, social, and economic systems, which tend to present information in a linear fashion without the necessity of integration into meaningful context. Integrated students are at-risk of failing as they attempt to grasp information in ways that do not match their experience. Among large populations of at-risk students are many from Native American and similar cultures that do not regard their world as a sum of parts but as a blend of all that they experience.

This lesson plan does include some traditional, linear approaches to delivering information (checklists, rules, analysis, problem solving and organization). In addition to the traditional, linear delivery of information, this lesson plan also includes some of the following strategies, designed to appeal to at-risk students as they learn academic/life skills:

- Integration of technology
- Non-competitive group and team work
- Performance-based assessment and rubrics
- Visual presentations and practice through technology and other means
- Project-based assignments that integrate family and community
- Activities appealing to multiple intelligences (Gardner)
- Application of Scientific Method to formulate and solve a problem.

Lesson Overview

In this lesson students will create their own nutritional label based on their own bread ingredients after studying labels and interpreting label information. To develop skills in reading and understanding food labels, students will examine, compare and contrast nutrition values of various refined and whole grain breads on spreadsheets and graphs.

Students will work with mathematical proportions, investigate bread additives and nutritional values.

Lesson Objectives

Project: Create a Nutritional Label for Bread, and produce data analysis spreadsheet and graphs.

Project Objectives: When students complete this session, they will be able to…

- ***Read and Understand*** nutritional food labels.
- ***Calculate*** nutritional amounts in English and metric weight.
- ***Analyze*** nutritional data.
- ***Create*** data spreadsheets and corresponding graphs
- ***Write*** list of ingredients for bread and nutritional label
- ***Use technology*** to research information.

Integration of Other Functional/Academic Skills: (Critical thinking is required throughout the lesson.) Students will be able to…

***Math**:*	Use math to calculate differences in ingredient amounts, understand percentages and English and Metric measurement.
***Reading**:*	Read information on breads, nutritional labels, and food additives.
***Writing**:*	Write a list of ingredients for your own bread and use this to write a nutritional label.
***Technology**:*	Search the internet for relevant sites, use computers to prepare a spreadsheets and graphs contrasting various breads.
Science	Apply data collection, analysis, and observation skills to draw conclusions about bread ingredients, label information and additives.

State/National Standards

http://www.cde.state.co.us/cdeassess/sci.htm#standards

Reading and Writing

1. Students read and understand a variety of materials.
2. Students read, select, and make use of relevant information from a variety of media, reference, and technological sources.
3. Students write and speak using conventional grammar, usage, sentence structure, punctuation, capitalization, and spelling.
4. Students apply thinking skills to their reading, writing, speaking, listening, and viewing.
6. Students read and recognize literature as a record of human experience.

Science

1. Students understand the processes of scientific investigation and design, conduct, communicate about, and evaluate such investigations.
3. Life science: Students know and understand the characteristics and structure of living things, the processes of their life, and how living things interact with each other and their environment.
5. Students know and understand interrelationships among science, technology, and human activity and how they affect the world.
6. Students understand that science involves a particular way of knowing and understand common connections among scientific disciplines.

Mathematics

3. Students use data collection and analysis, statistics, and probability in problem-solving situations and communicate the reasoning used in solving these problems.
4. Students use a variety of tools and techniques to measure, apply the results in problem-solving situations, and communicate the reasoning used in solving these problems.

Colorado Department of Education: Adult Basic Education

Skill Assessment Checklist Standards:

Level One:

1R1 – Recognize and use the following parts of speech: nouns, pronouns, conjunctions, adjectives and verbs.
1R3 – Interpret common abbreviations
1R9 – Interpret and follow basic signs and directories
1W6 – Write basic notes
1R17 – Interpret product labels, and give and follow directions
1R19 – Interpret information on advertisements, labels, or charts to select goods (compare and contrast)
1M10 – Interpret basic charts (compare and contrast)
1M1 – Add, subtract, multiply, and divide whole numbers

1W9 – Write a solution to a functional problem (follow a sequence, summarize)
1M5 – Compute cost, total amount, and change

Level Two:
2R9 - Interpret food package labels (weight, preparation, instructions, ingredients, etc.)
2M13 - Interpret tables and charts
2M1 – Add, subtract, multiply, and divide fractions and decimals
2M2 – Determine Equivalent fractions, decimals, and percents
2M10 – Compare price and quality to determine best buys for goods and services (compare and contrast)
2M14 – Compute Discounts
2M16 – Interpret Fractional standard weight measures
2M17 – Interpret fractional standard liquid and dry measures
2M20 – Demonstrate ability to use a four-function calculator to do basic functions and calculate decimals and percents
2M12 – Interpret bar, line, and circle graphs
2M2 – Determine equivalent fractions, decimals, and percents
2R14 – Read a passage or sample realia to determine fact and opinion
2R16 – Read a passage or sample realia and find the main idea and details
2R17 – Read a passage or sample of realia and summarize
2R18 – Recognize and use Standard English parts of a sentence: nouns, pronouns, verbs, conjunctions, adjectives, adverbs, prepositions, comparatives, superlatives, direct and indirect objects.
2R19 – Demonstrate ability to use organizational features of printed text: tables of contents, glossaries, indices, appendices, prefaces, afterwords, captions, and chapter headings.
2W10 – Use appropriate punctuation and capitalization

Websites

Required: (Use these sites for reading and background information on how to read nutritional labels)

www.cfsan.fda.gov/~dms/foodlab.html
www.kidshealth.org
www.indiana.edu/~atmat/units/nutrition/nutr_t1.htm

Support: (Use these sites for additional information and future reference)
Visit 8: Reading Nutrition Labels www.healthypartnership.com/cpr/visit8-1.asp - (This site is written for weight loss purposes and is easy to read, but not as extensive in math calculations).
www.bakersfederation.org.uk (This site provides information on additives and the factory bread making process.)

Pre-requisites

Read at fifth grade level or above
Possess basic computer skills to conduct word processing, search the web, and use Excel or other spreadsheet programs

Required Materials

- Four loaves of store-bought breads or similar bread products

Handouts

- Sample Nutrition Spreadsheet (Handout One)
- Lesson Rubric (Handout Two)

Required Equipment/Technology

Network accessible computers, also equipped with a word processing and spreadsheet programs.

THE LESSON

Students do not learn from what you do but from what you have them do.

PART I

Preparation (Day One: One Hour – shopping time is optional

Activity	Instructor Notes
1. Discuss the topic of nutritional labels, ingredients, and food additives. Review lesson rubric.	• **Have the class discuss ideas regarding nutrition and food labels. Introduce any common product with a food label and read to familiarize the class with the label and ingredients. Point out that the**

	ingredients are listed from most abundant to least abundant in the food (i.e., the first ingredient makes up most of the food product). Review lesson rubric.
2. Shop for four different types of bread: refined white (such as Rainbow or Holsum), whole wheat, multi-grain, and another random choice (tortillas, bagels). Remember to keep the receipt to include cost of each in your spreadsheet.	• **If the group is large, split the group in half and have each group study two different sets of breads. The shopping trip may be included as part of the lesson, and prices should be included as part of the spreadsheet.**

Performance and Practice (Days Two and Three – one hour each)

1. Create spreadsheet headings (refer to Handout One). Enter information for all brands.	
2. Create a table in MS Word and list ingredients for each brand. Use the menu "Table" at the top to choose the number of rows and columns you will need. You may try to search the web for a source describing unknown ingredients, and what the names of additives mean.	**<u>Writing Extension</u>: Look at the advertising words on the front of the bread package. Choose two words that the makers have used to describe their bread. Add a column on your ingredients table and enter these words by brand. Is there a pattern between the type of bread and the words used? What do the makers choose to advertise about their bread?**
3. Read internet sites. www.cfsan.fda.gov/~dms/foodlab.html **www.indiana.edu/~atmat/units/nutrition/nutr_t1.htm**	**Have students read the following internet sites to understand the measures and percentages represented on the food label. Cfsan.fda.gov covers history and components of the food label. Indiana.edu offers lessons in calculating measures and percentages on the label. You may find the front page of this website lesson adequate.**

Presentation (Days Four and Five – one hour each)

Instructions for students	Teacher notes
1. Create graphs for presentation using your spreadsheet.	• **Use the create graph icon at the top of the screen in Excel. Help the students choose selected information to be compared across all brands – such as calories, fat, and sodium, or cost and size.**
3. Based on your research on food labels and additives, write a list of ingredients you would like included in bread.	
4. Write a summary statement about your findings as represented in the graphs. Which breads and products have the most calories? The most additives?	
4. Now, create your own food label. It may take a lot of time finding food values for all your ingredients, so make up your own values for each ingredient (3 cups flour=200 calories, 2 g fat, 5 g. protein, etc.). Write your new food label using your numbers.	• **Check the student's math by looking at the list of ingredients and assigned values, and the corresponding answers on the nutrition fact label.**
4. Present your new label/bread as individuals or combine group results for a larger presentation.	• **A class or group can compile their results into a group presentation for use at a science fair or school presentation**
5. Discuss Rubric	• **Have students perform self-assessment of their performance in reading, writing, scientific method, use of technology, and creation of their bread and nutrition fact label.**

Lesson Assessment Strategy (Formative – As the lesson progresses)

Preparation, Presentation and Overall Implementation (Instructor)

1. Are the instructions and expectations for the class clear from the beginning?
2. Am I spending sufficient time on modeling the skills I want students to acquire?
3. Is there enough variety in the lesson to appeal to most learning preferences?
4. How many learning intelligences am I addressing?
5. Are students "connecting" to lesson objectives? How?
6. How is this lesson "integrated?"

Performance and Practice (Student)

1. Do all students have the skills to follow instructions? If not, what measures am I taking to address the challenge?
2. Are all students participating in the activities either by active observation or by voicing their thoughts?
3. Am I identifying the strengths of each student and pairing/grouping people accordingly? What results am I getting?
4. How are students performing? Are all of them able meeting 80% of the lesson objectives? If not, what am I doing to help them achieve more?

Technology

1. Is the technology working? Do the students need help with the video or tape recorders?
2. How are students reacting to the technology, and what do I need to remember when I teach this lesson again?
   How are students applying or wanting to apply their technical skills in other areas?

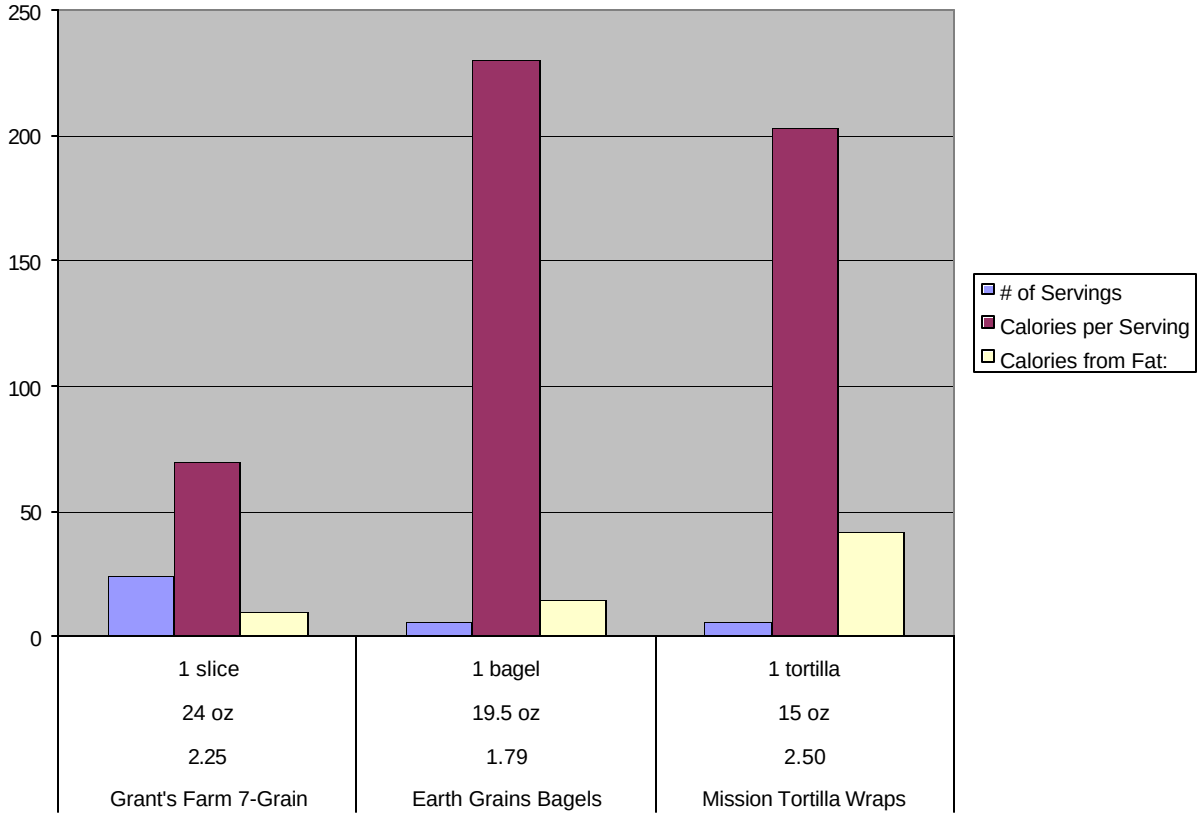
Activity Checklist

• Discuss nutrition fact labels.
• Shop for four loaves of bread from a local store.
• Read and review websites.
• Design nutritional spreadsheet.
• Enter data, analyze labels.
• Produce graphs based on data.
• Write your own nutritional label.
• Present to group.
• Discuss lesson rubric.

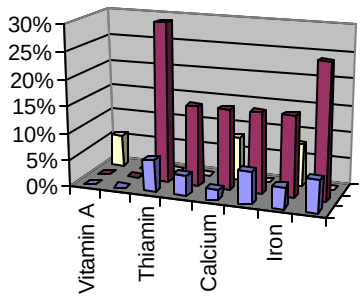
Handout One: Sample Spreadsheet and Charts

Nutritional Label Worksheet

Brand Name:	**Grant's Farm 7-Grain**	**Earth Grains Bagels**	**Mission Tortilla Wraps**
Cost	2.25	1.79	2.50
Total Weight	24 oz	19.5 oz	15 oz
Serving Size	1 slice	1 bagel	1 tortilla
# of Servings	24	6	6
Calories per Serving	70	230	203
Calories from Fat:	10	15	42
Contents:	Amount/% Daily Value	Amount/% Daily Value	Amount/% Daily Value
Total Fat	1g/1%	1.5g/3%	5g/8%
Saturated Fat	0g/0%	0g/0%	2g/10%
Polyunsaturated Fat	0g/0%	1g	0
Monounsaturated Fat:	0g/0%	0g/0%	0
Cholesterol	0g/0%	0mg/0%	0mg/0%
Sodium	140 mg/6%	460mg/19%	439mg
Total Carbohydrate	12g/4%	47g/16%	34g/11%
Dietary Fiber	2g/6%	2g	1g/3%
Sugars	1g	4g	2g
Protein	3g	8g	6g
Vitamin A	0%	0%	6%
Vitamin C	0%	0%	0%
Thiamin	6%	30%	0%
Riboflavin	4%	15%	0%
Calcium	2%	15%	8%
Niacin	6%	15%	0%
Iron	4%	15%	8%
Folate	6%	25%	0%


250
200
150
100
50
0
# of Servings
Calories per Serving
Calories from Fat:
1 slice
24 oz
2.25
Grant's Farm 7-Grain
1 bagel
19.5 oz
1.79
Earth Grains Bagels
1 tortilla
15 oz
2.50
Mission Tortilla Wraps

Nutrition by Brand



Grant's Farm 7-Grain 2.25 24 oz 1 slice 24 70 10 Amount/% Daily Value 1g/1% 0g/0% 0g/0% 0g/0% 0g/0% 140 mg/6% 12g/4% 2g/6% 1g 3g

- Grant's Farm 7-Grain 2.25 24 oz 1 slice 24 70 10 Amount/% Daily Value 1g/1% 0g/0% 0g/0% 0g/0% 0g/0% 140 mg/6% 12g/4% 2g/6% 1g 3g
- Earth Grains Bagels 1.79 19.5 oz 1 bagel 6 230 15 Amount/% Daily Value 1.5g/3% 0g/0% 1g 0g/0% 0mg/0% 460mg/19% 47g/16% 2g 4g 8g
- Mission Tortilla Wraps 2.50 15 oz 1 tortilla 6 203 42 Amount/% Daily Value 5g/8% 2g/10% 0 0 0mg/0% 439mg 34g/11% 1g/3% 2g 6g

Handout Two: Lesson Rubric

Name:
Teacher:
Date:
Course:

Breads and Nutritional Labels

Criteria:	Level 1	Level 2	Level 3
Is able to understand a nutrition fact food label and know what all categories mean	Is able to fully understand a nutrition fact food label and know what all categories mean.	Is somewhat able to understand a nutrition fact food label; needs help in understanding some categories	Needs help in understanding a nutrition fact food label; needs most categories defined.
Read and understood websites. Applied understanding to own project	Completely read and understood websites. Fully applied understanding to own project.	Somewhat read and understood websites. Not all information applied to own project.	Minimal reading and understanding of websites. Little information applied to own project.
Completed spreadsheet and corresponding graphs, and ingredients table.	Fully completed spreadsheet and corresponding graphs, and ingredients table	Partially completed spreadsheet and corresponding graphs and ingredients table	Spreadsheet and corresponding graphs not completely filled out, information missing or not clear.
Wrote summary statement on graph results – asked and answered questions about differences between brands.	Wrote complete summary statement on graph results – addressed differences between brands	Wrote summary statement on graph results – but did not fully address findings or differences in graphs or bread brands.	Wrote limited summary statement on graph results – differences minimally addressed.
Developed own ingredients list and completed own nutrition fact label.	Applied information from study, wrote fully developed ingredients list and nutrition fact label.	Applied some information, but ingredients list and nutrition fact label somewhat incomplete.	Ingredients list and fact label largely incomplete, Needs further help understanding meaning of lesson.

Created With the Rubric Builder – www.rubricbuilder.on.ca