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# **THE BREAKFAST FOOD CHALLENGE: HELPING TO MEET PERSONAL NEEDS IN THE SCIENCE CLASSROOM**

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## **Introduction**

One of the four Project Synthesis goal clusters for science education focuses on meeting the personal needs of students who are maturing in a scientific/technological society. Many existing science programs fall short in this regard, particularly if teachers are seriously interested in changing learner behavior for the better. One component of learner behavior that is highly consistent with the personal needs goal cluster of Project Synthesis is helping students become more intelligent consumers in a scientific society.

Traditionally, consumer-oriented education has not been called for in science education. Therefore, in order to help meet this need, new instructional approaches/lesson ideas must be developed and tested. At Southern Illinois University at Carbondale, science education faculty have been exploring ways to help learners gain the skills they need to improve their chances for meeting personal needs. "The Breakfast Food Challenge" is one example of an exciting and productive consumer-oriented science activity for learners in upper elementary, middle and secondary grades.

The key to "The Breakfast Food Challenge" is to help students learn *how to make judgments* about the selection of products when faced with a confusing array of brands. Numerous breakfast cereals are notorious for containing high amounts of sugar, sodium, calories and fat while being short on vitamins and fiber. On the other hand, commercials usually ignore the nutritional aspects of breakfast food. Just how does one make a decision about an important day-to-day consumer product based on a scientific strategy rather than on Madison Avenue hype?

Whether the students eat breakfast or not, whether they consume cereals or not, their families, relatives or friends probably do purchase cereals. Students often have considerable influence in consumer purchases. Even if they don't, they can establish some degree of control

over purchases, especially if they can demonstrate to their parents a thoughtful approach to buying behavior. They will learn to do this during "The Breakfast Food Challenge."

More importantly, this activity can be used to help learn how to make decisions about other products. This is accomplished by having students complete the activity inductively, acquiring the concept of making consumer decisions based on carefully thought-out criteria and then applying the same concept in new and unique consumer situations. How would this work? The following components are important to the success of this process if scientific consumer education is to change student consumer behavior.

### **COMPONENT I: The Science Background on Cereals**

Without "giving the activity away," the students need some basis for establishing criteria for the selection of breakfast cereals. The instructor should approach the activity by introducing students to the health-related aspects of typical cereal components. For example, relevant content would include the importance of vitamins and minerals in the diet, information about cholesterol and heart disease, instruction on the relationship between sodium and blood pressure, instructional comments on the importance of fiber in the diet, etc. This content introduction can be accomplished by way of direct instruction or research assigned to students. An area dietician or home economics teacher may be a useful guest speaker at this juncture.

### **COMPONENT II: The Activity**

Using "The Breakfast Food Challenge Worksheet" (Figure 2), orient students to the activity and their role in the activity. Selectively assigning students to small working groups that will cooperatively conduct the activity from start to finish is recommended.

It is important to allow students to devise and use their own set of criteria for establishing the "best cereal" or the "top three cereals" or whatever format the instructor chooses to use. Useful criteria might include sodium content, fiber content, protein content, sugar content, fat content, caloric content and cholesterol content. Some groups might also want to consider things like cost per serving and overall product appearance. Each of these criteria should be assigned possible point values. The students will readily recognize that, from a nutritional standpoint, some criteria are more important than others and may wish to assign greater point values to those.

More importantly, students should be instructed to make certain that their final selections are based on their initially-developed criteria

# Kellogg's. Common Sense... OAT BRAN

EACH SERVING CONTAINS 13 GRAMS OF OAT BRAN

## NUTRITION INFORMATION

SERVING SIZE: 1 OZ. (28.4 g, ABOUT 1/4 CUP)  
SERVINGS PER PACKAGE: 16

	CEREAL	WITH 1/2 CUP VITAMIN A & D STERILIZED MILK*	
		100	140*
CALORIES		100	140*
PROTEIN	4 g	8 g	
CARBOHYDRATE	22 g	26 g	
FAT	1 g	1 g*	
CHOLESTEROL	0 mg	0 mg*	
SODIUM	270 mg	330 mg	
POTASSIUM	115 mg	320 mg	

## PERCENTAGE OF U.S. RECOMMENDED DAILY ALLOWANCES (U.S. RDA)

PROTEIN	6	15
VITAMIN A	15	20
VITAMIN C	**	2
THIAMIN	25	30
RIBOFLAVIN	25	35
NIACIN	25	25
CALCIUM	**	15
IRON	25	25
VITAMIN D	10	25
VITAMIN B <sub>6</sub>	25	25
FOLIC ACID	25	25
VITAMIN B <sub>12</sub>	25	35
PHOSPHORUS	15	25
MAGNESIUM	10	15
ZINC	25	30
COPPER	8	10

\*WHOLE MILK SUPPLIES AN ADDITIONAL 30 CALORIES, 4 g FAT, AND 15 mg CHOLESTEROL.  
\*\*CONTAINS LESS THAN 2% OF THE U.S. RDA OF THIS NUTRIENT.

INGREDIENTS: OAT BRAN, WHEAT BRAN WITH OTHER PARTS OF WHEAT, SUGAR, WHOLE WHEAT FLOUR, CORN SYRUP, SALT, MALT FLAVORING, BAKING SODA.

VITAMINS AND MINERALS: NIACINAMIDE, ZINC (OXIDE), IRON, VITAMIN B<sub>6</sub> (PYRIDOXINE HYDROCHLORIDE), VITAMIN B<sub>9</sub> (RIBOFLAVIN), VITAMIN A (PALMITATE, PROTECTED WITH BHT), VITAMIN B<sub>1</sub> (THIAMIN HYDROCHLORIDE), FOLIC ACID, VITAMIN B<sub>12</sub>, AND VITAMIN D.

MADE BY KELLOGG COMPANY  
BATTLE CREEK, MI 49018, U.S.A.  
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## CARBOHYDRATE INFORMATION

	CEREAL	WITH 1/2 CUP VITAMIN A & D STERILIZED MILK	
		14 g	14 g
STARCH AND RELATED CARBOHYDRATES	14 g	14 g	
SUCROSE & OTHER SUGARS	5 g	11 g	
DIETARY FIBER†	3 g	3 g	
TOTAL CARBOHYDRATES	22 g	28 g	

†FIBER MEASURED USING LATEST METHOD RECOGNIZED BY FDA.

Figure 1

and not on some "phantom" criteria or criterion that comes to mind later in the activity. However, if this "phantom" criterion does show up, it presents a great teaching opportunity with respect to the use of valid procedures in scientific inquiry.

Two different protocols have been used in this activity for directing student data collection. Both can be effective. In some situations it will be better to have students collect a wide variety of side panels from cereal boxes and make them available for use on an in-class basis. When using this technique, students should write the price and package volume on the back of each panel. It is very important to make certain that these side panels reflect the wide assortment of cereals available in the well-stocked grocery or supermarket.

Where circumstances permit, the students can go to supermarkets and, with permission from the store managers, collect the data from cereal box panels. In this way, the full array of cereals will be available to them. Most store managers will be willing to have well-behaved student consumer groups visit the store for this purpose. Let store managers know the students will be requesting permission. Students can then avoid stores whose managers are hesitant to have students visit.

## COMPONENT III: The Concept

When data collection has been completed and the research reported to the class, it is important to discuss with the students what they learned from this activity. A number of things will be brought up by the students, some probably humorous and some serious. Don't let the students settle for comments concerning choosing cereals per se (although this is the focus of this particular activity). Lead

them to discuss scientific consumer behavior overall. They should, at this time, be able to discuss mechanisms available for them to use in making consumer decisions. The consumer publications available to them in the school or public library can be discussed and displayed. Regardless of the strategy used by the teacher, the concept of intelligent consumer behavior should be apparent at the close of the discussion.

#### **COMPONENT IV: Applying the Concept**

The key to making this activity successful is to help students develop their consumer skills so that they become confident in the veracity of the concept developed in Component III. Therefore, at this time, individual or small groups of students are assigned to do yet another "consumer product challenge" using new and different consumer products.

Have students select products that are amenable to an analysis similar to the one just completed. These products do not have to be foods or beverages, but they could be. Students may choose to analyze such things as soda (soft drinks) products, chocolate chip cookies, cheese products, cooking oils, etc. Or, they might want to look into appliances such as automobiles, air conditioners or refrigerators. An assortment of products analyzed by different class members or small groups can prove to be very interesting.

Again, the criteria need to be established which, this time, necessitates some homework on the part of the students. A mechanism for surveying the products needs to be established, the data collection completed and final decisions made.

This application activity is most powerful when students report their findings to the entire class. This allows for group discussions of products, their ratings and the reasons for choosing the selected criteria. The scientific nature of the activity can, once again, be reinforced by the instructor. Most importantly, perhaps, this application permits students to realize that their new found skills can, in fact, be used in their own lives for improved consumer satisfaction.

(The Breakfast Food Challenge Worksheet is found on the next two pages.)

## The Breakfast Food Challenge Worksheet

I. **The Task:** Select and rank order the top three breakfast cereals using carefully thought-out criteria.

II. **Directions:**

(Part A) You are to establish criteria for selecting the top three breakfast cereals that you could recommend for purchase. Your criteria should be largely related to dietary needs associated with healthful eating habits. List your criteria below (use as many spaces as needed):

1. \_\_\_\_\_

2. \_\_\_\_\_

(Part B) Using the side panels from breakfast cereals, rate cereals products according to the criteria you have selected. You will need to develop some kind of rating system. Using the data collection table found below (or one you produce), record the information about each cereal in a manner that makes sense to you. It is important for you to be able to come back to this data table when you make your final selection of cereal(s).

**Data Collection Table**

Cereal Brand	Criteria 1	Criteria 2	Criteria 3	Criteria 4	Criteria 5	Rank
1. _____						
2. _____						
3. _____						

**(Part C) Name your final selection(s) below. Write a short paragraph for each cereal explaining why you chose it (add lines as needed).**

**No. 1 Selection:** \_\_\_\_\_

**Reasons for selection:** \_\_\_\_\_

**No. 2 Selection:** \_\_\_\_\_

**Reasons for selection:** \_\_\_\_\_

**No. 3 Selection:** \_\_\_\_\_

**Reasons for selection:** \_\_\_\_\_

**(Part D) Prepare a short oral presentation for your classmates. Include in this presentation: (1) your criteria, (2) the procedures you used in collecting your data, (3) how you used your data collection to make your decision(s), (4) your final decision(s), and (5) a defense for them.**

**Figure 2**