

# Teacher-to-Teacher

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## The Surgeon General's Request for

## Nutrition Education

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*Healthy People*, the Surgeon General's Report on Health Promotion and Disease Prevention (Richmond 1979), makes some excellent recommendations for the improvement of diets—recommendations that should stimulate a revolution in eating habits similar to the recent shift in attitudes toward cigarette smoking. Just as the 1964 Surgeon General's Report on Smoking and Health brought to the attention of most Americans that cigarette smoking is hazardous to health, the new report may help to create a new attitude toward the selection of foods. This report urges the implementation of nutrition education. It says, in part:

Teachers, in particular, need to receive training in nutrition; and nutrition should be an integral part of the school curriculum. . . . Food choices are determined in part by the nutritional knowledge of the person who buys or prepares the food. Other factors include availability, personal and family likes and dislikes, and marketing and advertising practices. These factors should be addressed in educational initiatives to promote good food habits.

The report established the following goals for nutrition education: (1) Avoid junk foods, including those foods with high sugar and salt content; and (2) Beware of potential

deficiencies in processed foods. It also indicated that Americans would be healthier if they consumed:

- Only sufficient calories to meet body needs and maintain desirable weight (fewer calories for those who are overweight);
- Less saturated fat and cholesterol;
- Less salt;
- Less sugar;
- Relatively more complex carbohydrates, such as whole grains, cereals, fruits, and vegetables; and
- Relatively more fish, poultry, legumes (beans, peas, and peanuts, for example), and less red meat.

As the report stated:

The processing of our food also makes a difference. The American food supply has changed so that more than half our diet now consists of processed foods rather than fresh agricultural produce. Because of this change, we need more complete nutrient composition data about our food supply, particularly as this information relates to some of the newer essential "trace minerals," such as molybdenum, manganese, chromium, and selenium.

A nontechnical book appropriate for nutrition education for most high

school biology students is *The Wonderful World Within You: Your Inner Nutritional Environment*. Its author, Roger J. Williams (1977) discovered pantothenic acid, an important member of the vitamin B family. As I teach introductory courses in biology, I explain that pantothenic acid occurs in nature primarily as coenzyme A, needed at the beginning of the tricarboxylic acid or Krebs cycle (Lehninger 1973). Williams strongly advocates teaching nutrition in science courses. He states:

The first essential for those who seek proficiency in nutritional science is a good understanding of the fundamentals of chemistry. . . . Biology is another field in which one must get a working knowledge if one is to delve deeply into nutritional science. . . . Old-line books on nutrition cannot be recommended by me as being very helpful. This is because they fail to present the newer and highly illuminating insights.

### Various Opinions on Nutrition

Certainly experts in the field of nutrition hold differing opinions. Taub (1976) observed:

To read newspaper columns of medical advice, or similar articles in popular magazines, or for that matter, most textbooks on nutrition, you would suppose that nutrition is one of

the older branches of science and that just about everything to be known about it has long been established. People who would not presume to tell you how often to exercise without hedging and pointing out alternative possibilities do not hesitate to pontificate about your diet and how to regulate it. . . . Your ordinary nutritional expert is about as reliable as an expert on how to curb inflation or make a fortune in the stock market.

Ullrich (1973) recognized that most of our information concerning nutrition is misinformation given by people with something to sell. The Surgeon General's Report certainly offends those who are promoting the sale of sugar. Nevertheless, many physicians and scientists have long been urging a drastic reduction in the American consumption of sugar. Hoffer (1974) recommended:

. . . no junk food. Junk is defined as any food which contains sugar, refined flour, polished rice, and alcohol. This simple rule will eliminate most processed foods such as prepared cold cereals, pastry, candy, chocolate, white bread, ice cream, soft drinks, and so on.

Nutritionists promoting the patterns of American eating will find many excuses for perpetuating our national addiction to sugar that gives only empty calories without needed fiber, vitamins, and minerals.

Some of the consequences of excessive sugar were described by Macy (1942) in her extensive study of child nutrition. Children who had relatively poor diets consumed by choice more sugar than did children on better diets. Apparently, malnutrition damages the control mechanism and reduces the wisdom of the body to seek better foods. Many Americans are addicted to sugar and suffer from a variety of diseases related to their addiction. One common problem is overweight. Another is hypoglycemia, or low blood sugar levels. Hurdle (1970) estimated that over 50 million Americans have hypoglycemia in varying degrees of severity. The symptoms of this condition are often misdiagnosed. These symptoms include mental confusion, forgetfulness, impatience, depression, blurred vision, fatigue, head-

aches, muscle twitches, and feelings of weakness in the morning prior to eating breakfast.

The Surgeon General warns us that our processed foods might be deficient in necessary minerals and other nutrients. Schroeder (1977) observed:

The average American diet, composed as it is of processed, frozen, stored, canned, and refined foods, is probably marginal, and in some cases, partly deficient in several essential micronutrients, especially vitamin B<sub>6</sub>, pantothenic acid, tocopherol, chromium, zinc, and possibly manganese. The results of these inadequacies are several chronic diseases and conditions which are characterized by metabolic abnormalities. . . . Rough calculations indicate that it would be almost impossible to construct a diet of frozen and canned vegetable food, processed meats, canned fish, dairy products, and refined sugars containing 2 mg of B<sub>6</sub> per day, unless large amounts of bran and germ products were added to each meal.

The deficiencies in the American diet are well described in the Health and Nutrition Examination Survey (HANES), a report from the Department of Health, Education, and Welfare on the 1971-74 dietary intake. Stronck (1976) summarized the problems of inadequate protein, vitamin A, vitamin C, and calcium. Despite the many authoritative studies that have demonstrated serious deficiencies, most Americans continue to assume that by eating some variety of foods, they avoid all nutritional problems.

## Diet and Behavior

Perhaps the most difficult prejudice to overcome is the common attitude that diet has no influence on behavior. Stronck (1980) listed some of the most significant insights into the links between food and behavior, relationships recently established by valid studies. Similarly, Phlegar and Phlegar (1979) noted that both medical doctors and educators have been slow to recognize a direct relationship between the kinds of food children consume today and their behavior and academic achievement. Accord-

ing to Smith (1976), school breakfast programs can improve the attention span and learning capacity of students by from 50% to 90%. The chief difficulty is that the Federal government's agricultural surplus program makes refined flour and sugar available. Allowing children in the classroom free access to nuts, cheese, and other protein snacks can calm even the wildest, most noncompliant and distractible children.

Traditionally our culture has presumed that behavioral disorders are problems of morality or psychiatry. For example, alcoholism was long regarded as the sin of drunkenness. Later it was treated primarily as a psychological disorder that could be helped through group discussions and counseling. Williams (1959) offers a sound basis for a medical approach to this complex disease. Similarly, our society needs to go through a transition to recognize the biochemical basis for some behavioral disorders, especially those that affect the ability to learn in school.

## Nutrition Education and Teachers

The Surgeon General's report represents an emerging consensus that the nation's health strategy must be dramatically recast to emphasize the prevention of disease. Nutrition education will play a major role in this process. While the professionals in the various health professions are struggling to use new insights, what will science teachers be doing in the classrooms? They should be introducing nutrition education to prepare their students to make some of the most important decisions of their lives—the daily selection of the foods they will eat. For teachers who feel insecure with the variety of opinions on nutritional topics, inservice training may be needed. Such inservice work deserves a high priority. The health and strength of our nation may ultimately depend on how well we meet this challenge.

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## Chili Hot Pot

"The way to a man's heart is through his stomach." "An army travels on its stomach." And less-than-eager students are motivated to learn by the lure of food!

Thirteen students participated in the investigation "Chili Hot Pot," a unit on nutrition. We chose to feature chili because it is a tasty, economical entree. Considerable research on the nutritional composition of chili preceded the actual "hands-on" dicing, slicing, frying, and mixing.

Students performed chemical analyses (presence of fat, protein, starch, glucose, chloride, water, and percentage composition of water) for each ingredient. Math emerged as an important tool of science. Because our facilities are limited, students wearing a white lab coat took turns performing the different analyses at a desk in front of the class. The shy gained a security blanket; the extroverts assumed roles as "mad" scientists! Everyone eagerly participated. We shared results so that tests only needed to be performed once. Excitement and expectation filled the room.

When the time arrived to prepare the ingredients, all the students pitched in to play chef, diener, and diner. A friendly competition developed to prove who was the greatest food-chopper in the group, and many eager cooks stirred and seasoned the base. We refrigerated the chili base, and students left the class eagerly anticipating the next day's activities.

A day later, the students met me at the door, most anxious to begin. A salad and garlic bread were chosen to accompany the chili feast and activity escalated as students tossed the salad and heated the bread. Like the Pied-Piper's tune, the aroma of freshly heated bread carried from cooking area to science room, and guests appeared for the festivities. To the chili base, we added cans of kidney beans. Flasks of lemonade appeared. Good camaraderie as well as good food were enjoyed by all.

In the days that followed, we computed nutritional value and cost. Students prepared nutritional data booklets by using mimeographed material from a current magazine. They analyzed cost using the daily newspapers. After they determined the cost per serving, I challenged students to come up with another meal of equal nutritional value at the same or a lesser cost. Biology, chemistry, and math had blended together, as had the ingredients of the chili, to create a most palatable product.

### "A Worm is to Wriggle"

Directions for this activity follow. Devise and complete an investigation on innate behavior and learning potential of members of a species. Bring to school six members of a species (ants, earthworms, sowbugs, crickets, grubs, etc.) in a "livable-container." Identify each member as to weight and size. Try to get a variety in the members as to size and agility. Prepare a chart for your data indicating each member's response to a given stimulus. Some suggested areas of study are: temperature changes, changes in light intensities, touch, water, odors, gravity, sound, color, and shape. A shoe-box maze may be constructed for gathering data on trial-and-error learning as well as on conditioning. Draw conclusions based on your data. Indicate modifications for procedures that would enable further research.

Let the fun begin. Move back. Learning needs room to flourish.

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