WISCONSIN'S MODEL ACADEMIC STANDARDS FOR

Nutrition

Wisconsin Department of Public Instruction

Wisconsin's Model Academic Standards for Nutrition Education

Students will gain the knowledge and skills to select foods for a healthy diet that supports health and reduces the risk of illness and future chronic diseases.

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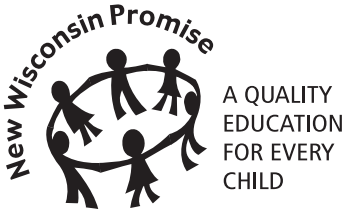

Wisconsin Department of Public Instruction
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Madison, Wisconsin, USA

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Foreword

Well-nourished children are ready to learn. Nutrition education provides students with the knowledge to develop good eating and exercise habits, and the skills they need to make the right choices in the future.

The New Wisconsin Promise calls for a comprehensive approach to improving student health and readiness to learn. Educators, parents, and community members can use the Nutrition Education Standards as a K-12 framework to send students consistent, age-appropriate messages about the importance of preparing for life as healthy, well-informed adults.

With funding from the U.S. Department of Agriculture and Wisconsin Action for Healthy Kids, the Department of Public Instruction convened a committee of teachers and nutrition experts to develop these standards. While they are not mandatory, we hope that school districts will use them to develop a comprehensive K-12 nutrition education program.

An essential element of nutrition education addressed in these standards is equipping students with the critical thinking skills needed to judge the reliability of information that is presented to them. Other key concepts presented in the standards promote healthy eating behaviors, food safety, and nutrition for growth, health, and energy. The standards support variety, moderation, and balance in food choices, with the ultimate goal of engaging students in their education as they make healthier choices for themselves and their families.

The health of this generation of children will reflect our priorities as educators, parents, community members, and as a society. Healthy students are part of healthy communities. Both are essential for a healthy Wisconsin.

Elizabeth Burmaster
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February 2009

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Introduction

Eating well can make a positive difference in a student's ability to achieve in school. Undernutrition during any period of childhood can negatively impact on a student's behaviors, school performance, and overall cognitive development. Overnutrition, specifically in relation to obesity, can also hamper academic and social growth and development. Nutrition education in school promotes healthier eating in students.

The Wisconsin Nutrition Education Standards (preK-12) provides guidance to students, parents, educators, administrators, policy makers and the community to support state and local school district nutrition education efforts by:

- Setting appropriate expectations for learner performance and achievement by the end of fourth, eighth and twelfth grades
- Suggesting a framework for effective and comprehensive nutrition education programs and curricula
- Demonstrating how nutrition education can be used to help meet core academic standards and to give students opportunities to synthesize knowledge and experience across disciplines
- Defining the methods, goals and outcomes of nutrition education
- Providing a mirror and a window to cultural diversity within the US and the world through food

These standards help set the bar for high-quality, comprehensive nutrition education across the state of Wisconsin. Learning about healthy eating and nutrition is part of understanding the importance of being mentally, socially and physically fit and taking responsibility for leading a healthy and active lifestyle. Preparing students for life as productive adults requires critical thinking skills, content knowledge, and more. To succeed in the 21st century, all students will need to master core subject material, and gain the skills that enable them to navigate the complex life and work environments in this globally competitive information age. Learning about nutrition is one way to help students apply knowledge and critically view multiple aspects of food, health and society, while developing higher level thinking skills.

Overview of Nutrition Education

Purpose of Nutrition Education Standards

Nutrition education has the potential to improve student's consumer and health literacy, which are critical 21st century skills, and contributes to the development of healthy eating and physical activity behaviors. Students learn to choose healthy foods through effective nutrition education. Teaching nutrition can improve students' eating habits, but students need consistent messages that build on skills already in place. Developing sound nutritional and exercise habits early in life will help children become healthy adults. This is one of the most important life skills that we can teach our students, and requires a comprehensive approach to be effective. Teachers can use the nutrition education standards as a framework to develop age-appropriate lessons that are consistent in scope and sequence.

Using the Nutrition Education Standards

These standards set an expectation of skills and knowledge that should be acquired by the end of fourth, eighth and twelfth grades. As with other Wisconsin Model academic standards, each subject is divided into *content standards* that tell what students should know and be able to do. Each subject is

also divided into *performance standards* that identify how students will show they meet the content standards.

Implementing these standards is voluntary. Districts may use the standards to develop local grade-by-grade level curricu¬lum. Implementing standards may require some school districts to upgrade school and district curriculums. In some cases, this may result in changes in instructional methods and materials, local assessments, and pro¬fessional development opportunities for the teaching and administrative staff.

Defining Curriculum in Relationship to the Standards

These standards are statements about what students should know and be able to do, what evidence of learning they will demonstrate, and how well they should be expected to know or do it. Curriculum is devised by local school districts to focus instruction in grades PreK-12 to prepare students to meet the standards. It consists of activities and lessons at each grade level, instructional materials, and various instructional techniques. In short, standards define what is to be learned at certain points in time, and from a broad perspective, what performances will be accepted as evidence that the learning has occurred. Curriculum specifies the details of the day-to-day learning at the local level.

Applying the Nutrition Education Standards Across the Curriculum

Nutrition and food studies provide real world contexts for curriculum and instruction. Using foods, labels and other hands on nutrition examples helps teachers create meaningful learning activities that can connect core curriculum topics with real life. When students see the connection between what they are learning and real world issues that matter to them, their motivation and learning soars. Content knowledge and skill connect with rigorous standards in science, health, mathematics, and other subject areas. Nutrition Education Standards also integrate this rigorous content with real-life applications providing motivation for learning through relevance to students' daily lives.

Nutrition education meets 21st century skills

Global Awareness: Various cultures express themselves through foods through nutrition education; students identify where foods originated, where they are produced, and the export-import chain. Such content prepares students to interpret current events such as contaminated products from one country showing up in another. Nutrition education also teaches different diets around the world and their impact on health and longevity. Students understand that different cultures have developed different ways to achieve a balanced and healthy diet.

Financial, Economic, Business and Entrepreneurial Literacy: Nutritional status can relate to economic status. The financial situations of individuals and families, and the economic situation of a location, state and country directly impacts the ability to afford adequate and appropriate food. Skills expected of 21st century graduates include knowing how to plan menus and shop for a nutritionally smart diet, knowing how to make appropriate personal economic choices relating to diet, nutrition, health and fitness and understanding the role of food in the economy.

Health Literacy:
Health literacy is defined in Healthy People 2010 as "The degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions." Health Literacy in Nutrition includes the ability to understand food labels and supplement bottles, and to evaluate diet information for credibility and quality when

seeking preventative health care and managing chronic health conditions. Students develop nutrition knowledge and skills through direct experiences, and can relate these to everyday life. Health-literate citizens are critical thinkers, problem solvers, and self-directed learners. They communicate effectively, and they are responsible and productive citizens. The need for young people to develop literacy with respect to health food choices is crucial to improving the health of the population and is supported in each of the skills addressed in the health education standards. Students are expected to understand how to access and use basic health and nutrition information to make decisions to enhance health and how proper diet and nutrition play a role in preventing chronic disease.

Learning, Innovation, Creativity Skills: Nutrition education can serve as a vehicle to foster learning, creativity and innovation through cooking and creating healthy menus and other projects that pertain to foods and nutrition. Furthermore, critical thinking is learned and practiced by analyzing nutrition information, reading labels, and choosing nutritious foods.

Information, Media and Technology Literacy: Accessing nutrition information efficiently and effectively has become easier, but evaluating information critically and competently and using information accurately and creatively requires additional effort in the 21st century. Students need to understand how to use technology to research nutrition topics and health claims, and then be able to evaluate the reliability and validity of the information they find. In addition, students need to analyze how media messages relating to food choices and nutrition are constructed, for what purposes, and using which tools, characteristics and conventions. It is important for students to examine how individuals interpret messages differently, how values and points of view are included or excluded, and how media and culture can influence beliefs and behaviors.

Nutrition Education and School District Wellness Policies

Good nutrition affects the health and well-being of children. There is a positive correlation between a student's health and well-being and his/her ability to learn. Good nutrition and health goes beyond weight – it involves food choices and eating behaviors to prevent disease and maintain or improve physical, emotional, and mental status. Schools can play an important role in helping students establish healthy eating habits by providing nutritious meals and snacks through the schools' meal programs, providing nutrition education and by supporting the development of good eating habits through a healthy school environment. Local school wellness policies serve as standards for food choices, and include nutrition education to support the policies. These wellness policies help define and focus the school environment as a healthy place to learn and grow.

Nutrition Education Beyond the School Day

Healthy behaviors and habits with regard to eating and exercise cannot be accomplished by the schools alone. Nutrition education extends beyond the school environment, and it is necessary for school staff, parents and the community to be involved in cooperative efforts to promote, support, and model healthy eating behaviors and habits. Children will be able to learn and practice good nutrition at home and school when there are cooperative efforts between home, school, and after-school activities.

High Quality Nutrition Education

Because proper nutrition has a significant impact on a student's ability to learn and to live a healthy life, the goal of nutrition education is to positively influence students' eating behaviors by educating students on good nutritional habits and making healthy food choices. School-based nutrition education has the potential to impact positively the nutritional health and dietary behaviors of children, and is included as an important element in comprehensive school health. Nutrition

education, both formal education in schools and informal education by parents and others can help children to make more informed food and beverage choices.

Nutrition education is designed to help students learn all of the following:

- Nutritional knowledge, including but not limited to, the benefits of healthy eating, essential nutrients, nutritional deficiencies, principles of healthy weight management, the use and misuse of dietary supplements, and safe food preparation, handling, and storage.
- Nutrition-related skills, including, but not limited to, planning a healthy meal, understanding and using food labels, and critically evaluating nutrition information, misinformation, and commercial food advertising.
- How to assess their own personal eating habits, set goals for improvement, and achieve those goals by using a food guidance system, such as MyPyramid, the Dietary Standards for Americans, and Nutrition Fact Labels.

High quality nutrition education will provide children with the knowledge and skills needed to lead healthy lives. The nutrition education standards will assist teachers in providing age appropriate, sequential lessons from preschool through high school.

Ideally, nutrition education will be integrated into other subjects to complement, but not replace, standards-based nutrition education. Other characteristics of quality nutrition education include:

- linking nutrition education and physical activity for lifestyle balance
- behavior-focused and interactive activities
- coordination with school food service
- clear, consistent and coherent nutrition messages throughout the school, classroom, and cafeteria
- adequately prepared staff
- accurate and current nutritional advice
- opportunities for students to practice what they are learning
- promotion of eating as an enjoyable activity, as well as one that contributes to good health
- encouraging students encouraged to develop positive attitudes towards eating, both through the formal curriculum and all the other learning opportunities that occur during the school day

Youth Nutrition Education Concepts

To be effective, nutrition education must be developmentally appropriate and consider the environment and other factors that influence behavior. The Cognitive Development Theory (Table 1) describes characteristics of youth at different ages and gives a framework for what is developmentally appropriate. Prior education, the attitudes and actions of adults such as parents and teachers, and the media also influence the behavior of youth and their understanding of nutrition.

Table 1. Cognitive Development Theory

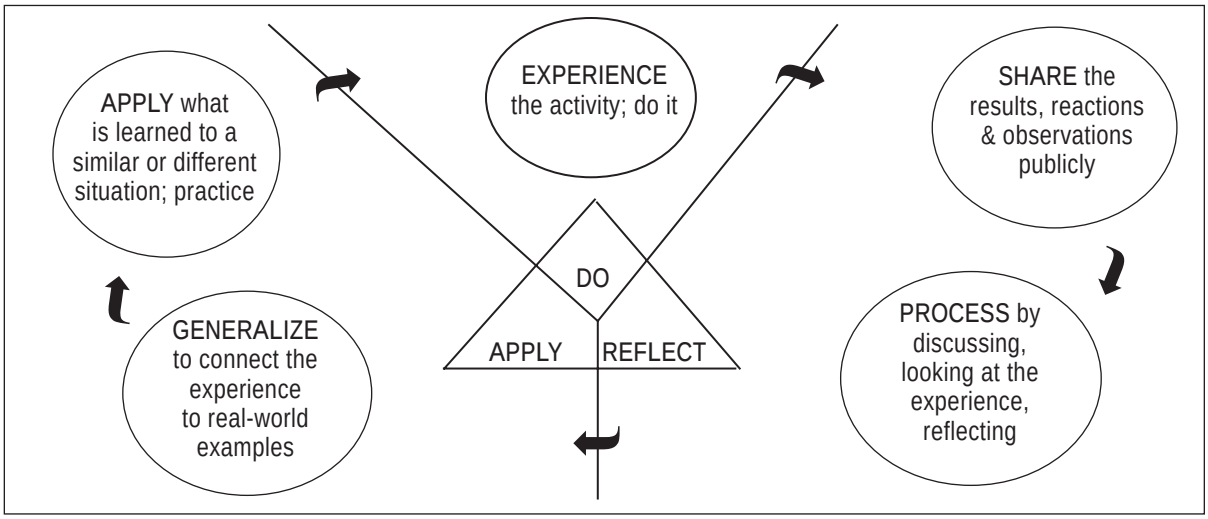
Stage	Characteristics
Pre-operational (Ages 2 to 6 or 7)	• Can repeat words or phrases without understanding them • Are egocentric • Don't consider cause and effect • Have difficulty with categories
Concrete Operational (Ages 6 or 7 to 11 or 12)	• Are beginning to consider cause and effect • Can think through a chain of events • Can classify objects and concrete ideas • Are oriented in the present
Formal Operational (Ages 11 or 12 and older)	• Are beginning to understand the abstract • Are beginning to form hypotheses • Are beginning to consider multiple consequences

The Cognitive Development Theory summarizes much of what we know about developmentally appropriate education. However, there are still gaps in our knowledge. For example, there may a lag between what children understand and their ability to express this understanding. There are multiple challenges with assessing understanding: Do youth understand the question being asked? Are they able to communicate the answer clearly? Are they trying to give socially desirable answers? Culture also could affect understanding. Concepts often build from one grade level to the next. For example, in Grade 3 youth learn what it means for a food to be made from whole grain, and in Grade 4 youth use food labels to determine which foods are whole grain foods. Questions throughout the lessons can help educators gauge how well youth understand the material.

Experiential Learning Model

The Experiential Learning Model offers a format for effective nutrition education using hands-on learning. Youth learn from experience – the "Do" portion of The Experiential Learning Model (Figure 1). Questions and opportunities related to the activity can help them process this experience – the "Reflect" and "Apply" portions of the model.

Figure 1. Experiential Learning Model



Cognitive Development and Nutrition Education

Table 2: Pre-operational Operational Stage

Stage	Characteristics	Implications for Nutrition Education
Pre-operational Stage (Ages 2 to 6 or 7)	Have trouble focusing on wholes and parts at the same time	It is not possible to be part healthy and part unhealthy; for example, if you have a sore throat you are not healthy
	Have difficulty with categories	All edible items are food, have difficulty seeing peas as a type of vegetable, will sort foods into groupings such as breakfast
	Attend to one aspect of a message at a time	For example, you might say "eating lots of different vegetables like peas, carrots, and broccoli is a healthy way to eat" but they hear "eating peas makes you healthy"
	Cannot "reverse" an experience	For example, cannot go from "if I eat too much I will get fat" to "if I don't eat too much, I won't get fat"
	Don't consider cause and effect	For example, I know I am healthy because I am in school today"
	Can repeat words and phrases without understanding them	For example, might say "vegetables are good for you" but might not be able to name vegetables or tell why vegetables are good for you
	Have difficulty understanding change	For example, no understanding of digestion or how food affects their bodies

Table 3: Concrete Operational Stage

Stage	Characteristics	Implications for Nutrition Education
Concrete Operational Stage (Ages 6 or 7 to 11 or 12)	Are beginning to consider cause and effect	Understand their actions are related to their health but can't explain how
	Can reverse thinking to consider the original and changed state	For example, "I was healthy and then I got a sore throat and then I got better and now I'm healthy again"
	Can think through a chain of events	For example, can understand how food goes from farm to table
	Can classify objects and concrete ideas	Can categorize foods into food groups by similarities (e.g., foods in meat group come from animals); still consider foods as "good" or "bad"
	Are oriented in the present	For example, future effects of nutrition on health are not important

Table 4: Formal Operational Stage

Stage	Characteristics	Implications for Nutrition Education
Formal Operational Stage (Ages 11 or 12 and older)	Beginning to understand abstract ideas	For example, understanding that dietary fat contributes to heart disease
	Beginning to form hypotheses	For example, understanding that eating too much can lead to weight gain and eating less food than their bodies need can lead to weight loss
	Beginning to see things from another's point of view	For example, "It must be hard for her to be overweight and have kids tease her"
	Beginning to consider multiple consequences of an action	For example, understanding that eating healthy meals might help them do better in sports or maybe it won't make a difference
	Can make good decisions based on their own value system	Food and behavior choices are related to appearance, peers, and independence

Abstract Nutrition Concepts

- Vitamins, minerals
- Nutrients (for example, protein, fat)
- Chronic disease risks
- Process by which food affects health
- Classifying foods by nutrients

Concrete Nutrition Concepts

- Eat lots of different foods each day
- Whole food items
- Classifying foods by sosurce (for example, meat, milk, plant foods)

Sources used by Gayle Coleman, UW-Extension, Madison, Wisconsin to develop Tables 2, 3, and 4.

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Organization of the Standards

Nutrition is a complex, far-reaching subject, and these standards will help educators use developmentally-appropriate nutrition messages in the classroom. Six key concepts were used to organize key messages:

- Nutrition for growth and energy
- Food safety
- Critical thinking skills and practical reasoning
- Promotion of healthy behaviors
- Diversity
- Identification and classification of food

The concepts also have underlying messages to support variety, moderation, and balance in food choices and encourage lifelong healthy eating behaviors.

The nutrition education standards have performance goals that specify a desired outcome. The standards are organized to provide a structure, scope, and sequence to build nutrition education and health literacy skills. There are many ways to meet the standards and build a strong nutrition education curriculum. Nutrition can be an exciting and fun way to reinforce math, science and English language skills while helping students develop the skills for a healthy future.

Wisconsin Model Academic Standards for Nutrition Education

Students will gain the knowledge and skills to select foods for a healthy diet that supports health and reduces the risk of illness and future chronic diseases.

A. NUTRITION FOR ENERGY AND GROWTH

CONTENT STANDARD

Students in Wisconsin will understand the concepts related to and the connections between food choices, eating habits, activity, and healthy growth.

Rationale: Nutritional needs vary across the lifecycle. Growth and energy are dependent on healthy eating and nutrition. Students who understand the personal relationship of food choices to energy and growth may be more likely to maintain or improve health.

PERFORMANCE GOALS

▶ ***BY THE END OF GRADE 4 STUDENTS WILL:***

A.4.1 Identify why people need to eat different kinds of foods

A.4.2 Identify feeling hungry vs. feeling full/ satisfied

A.4.3 Identify the benefits of relationship between physical activity (using energy) and the need for food and water; state that people need to eat food to have energy and grow

A.4.4 Match food groups to their primary contribution for a healthy body, realizing that some foods are better fuel than others (nutrient density)

▶ *BY THE END OF GRADE 8 STUDENTS WILL:*

A.8.1 Explain the concepts of variety, moderation, and balance, and balancing caloric intake and energy expenditure

A.8.2 Identify recommended amounts of foods from each food group using the food guidance system

A.8.3 Compare portion and serving sizes and demonstrate an awareness of the amount of food consumed and the calories and other nutrients consumed as compared to recommended or label amounts

A.8.4 Describe how factors such as age, physical activity and gender affect nutritional requirements

▶ *BY THE END OF GRADE 12 STUDENTS WILL:*

A.12.1 Describe the nutritional needs associated with life stages (prenatal through late adulthood)

A.12.2 Explain how overweight and obesity are the results of overeating and underactivity

A.12.3 Demonstrate an awareness that the amount of food that is served may not be an appropriate amount to consume based on the contribution of that food to the day's overall intake of calories and nutrients

B. FOOD SAFETY

CONTENT STANDARD

Students in Wisconsin will understand/know how to keep food safe for consumption and how to prepare food safely.

Rationale: Food borne illness is a common and serious consequence of poor hygiene, unsafe food handling and improper food preparation.

PERFORMANCE GOALS

▶ ***BY THE END OF GRADE 4 STUDENTS WILL:***

B.4.1 Identify when adults should help with food preparation

B.4.2 Identify ways to keep food fresh and safe to eat

B.4.3 Recognize that eating improperly prepared or spoiled food can make you sick

B.4.4 Trace a food from origin to table

B.4.5 Describe a food chain

B.4.6 Explain the importance of hand-washing during food preparation

▶ *BY THE END OF GRADE 8 STUDENTS WILL:*

B.8.1 Identify and explain the importance of key food safety messages (clean, cook, chill, avoid cross-contamination)

B.8.2 Verbalize how to safely prepare/pack foods

B.8.3 Explain the relationship between food safety practices and health

B.8.4 Describe factors associated with a safe food supply (food handling, production, storage, and preparation techniques)

B.8.5 Construct a food chain

B.8.6 Identify points in food preparation where hand washing is needed

▶ *BY THE END OF GRADE 12 STUDENTS WILL:*

B.12.1 Identify and explain the importance of key food safety messages (clean, cook, chill, avoid cross-contamination) and identify Critical Control Points in a HACCP (Hazard Analysis Critical Control Point) plan

B.12.2 Identify the effects of food preparation techniques on the nutritional value of the food

B.12.3 Explain how food importing/exporting, processing, food handling, and cooking methods can affect the safety of our food supply

B.12.4 Identify potential sources of food contamination between the origin of a food and consuming the food

B.12.5 Explain how contaminants may enter the food supply at various points in a food chain

B.12.6 Explain why the USDA has a food recall process and how the process works

C. CRITICAL THINKING AND PRACTICAL REASONING

CONTENT STANDARD

Students in Wisconsin will understand and use critical thinking and practical reasoning skills to address food choices, nutrition, and health concerns

Rationale: Critical thinking and practical reasoning are used in everyday problem solving. Students who develop these skills are more likely to approach everyday problem solving more deliberately, with greater flexibility, and increased open-mindedness.

PERFORMANCE GOALS

▶ ***BY THE END OF GRADE 4 STUDENTS WILL:***

C.4.1 Be able to distinguish between food and nonfood items

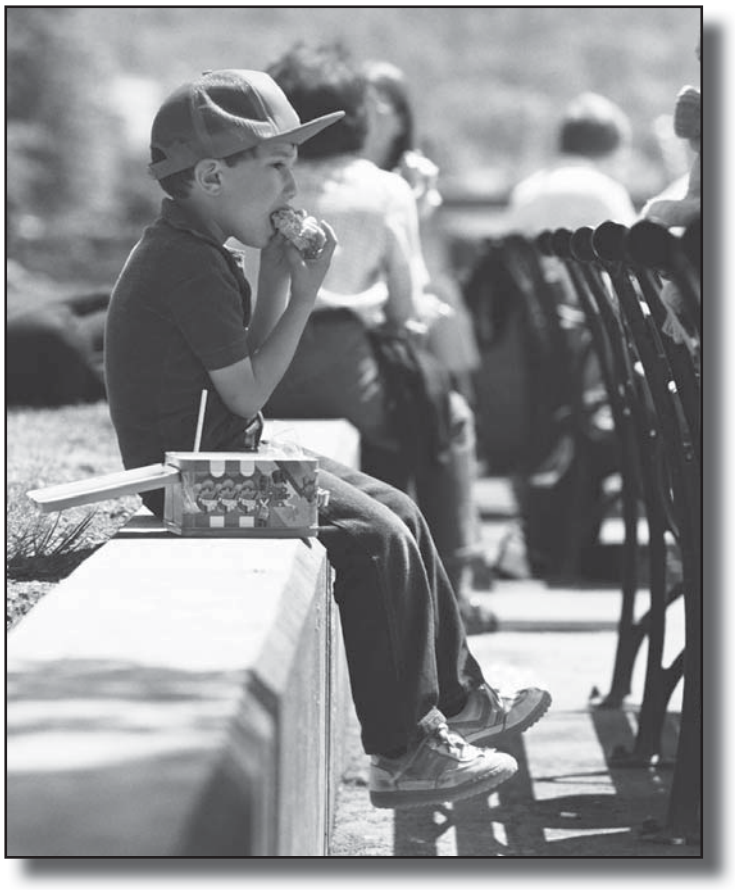
C.4.2 Identify a healthy eating habit

C.4.3 Graph progress toward achieving a set nutrition goal, using a simple log chart

C.4.4 Compare and contrast snacks which can contribute to or undermine healthy eating habits and identify why one snack might be a better choice than another snack

C.4.5 Recognize factors in advertisements to sell foods

C.4.6 Demonstrate how to use food labels to select a healthy food or snack



▶ *BY THE END OF GRADE 8 STUDENTS WILL:*

C.8.1 Demonstrate the ability to apply a decision-making process to food choices at home and away from home

C.8.2 Identify the consequences of consuming too much or too little food

C.8.3 Assess eating habits (meals and snacks), set a personal nutrition goal, and track progress toward achieving this goal

C.8.4 Plan snacks and/or meals that are consistent with the Food Guidance System

C.8.5 Identify examples of how the food companies, advertising, and the media encourage people to buy and use different foods

C.8.6 Differentiate between hunger and non-hunger cues to eating

C.8.7 Demonstrate how to use food labels to make healthier choices

C.8.8. Identify reliable sources of nutrition information

▶ *BY THE END OF GRADE 12 STUDENTS WILL:*

C.12.1 Use reliable nutrition information to make dietary and health decisions, and compare and contrast fad diets, including the preceived and actual costs of weight loss attempts

C.12.2 Calculate Body Mass Index (BMI) and interpret results, realizing that body composition is only one factor in assessing health

C.12.3 Critically analyze dietary habits related to health and how they may affect body weight and long term health

C.12.4 Work within a budget to plan a week of nutritious meals for a family of four

C.12.5 Describe the benefits to buying locally grown and/or produced foods

C.12.6 Describe the components of a nutrition label, and how to use the information from labels to make informed decisions regarding food choices

C.12.7 Give examples how economics influences food prices, availability, and marketing strategies

C.12.8. Evaluate the usefulness and credibility of nutrition information available online and in the media

C.12.9 Demonstrate how to comparison shop for foods, including comparing nutrient density, unit pricing, food packaging, and prices of foods in various forms

D. NUTRITION FOR HEALTH PROMOTION OF HEALTHY BEHAVIORS

CONTENT STANDARD

Students in Wisconsin will understand concepts related to personal health promotion and disease prevention, and will practice behaviors to promote health, prevent disease, and reduce health risks.

Rationale: Making nutritious food choices is a cornerstone of healthy behaviors. Knowledge of nutrition concepts will assist students in making informed choices regarding their lifestyles.

PERFORMANCE GOALS

▶ ***BY THE END OF GRADE 4 STUDENTS WILL:***

D.4.1 Understand the concept of variety, and identify that eating a variety of foods is important to health

D.4.2 Describe the consequences of overeating

D.4.3 Identify sources of fat, sugar, salt, fiber, protein, and calcium in the diet

D.4.4 Recognize the relationship between diet and chronic diseases, such as blood pressure, heart disease and obesity

▶ *BY THE END OF GRADE 8 STUDENTS WILL:*

D.8.1 Define the concepts of balance, and moderation as part of a healthy diet

D.8.2 Identify avenues of support for eating disorders, and where to go with concerns

D.8.3 Describe the relationship between food choices and health problems, such as dental caries, osteoporosis, diabetes, obesity, and blood pressure

D.8.4 Demonstrate the ability to influence and support others in making positive eating and physical activity choices

D.8.5 Identify key nutrients from each food group and list ways nutrients can promote health and prevent of chronic disease

D.8.6 Demonstrate understanding of health promotion concepts

▶ *BY THE END OF GRADE 12 STUDENTS WILL:*

D.12.1 Understand the links between community resources, healthy eating and physical activity, and how this affects personal health

D.12.2 Advocate for positive eating and physical activity choices in the community, such as increased access to fresh fruits and vegetables through community/school gardens, farmer's markets and local produce cooperatives

D.12.3 Describe the relationship of social and emotional factors in dysfunctional eating and identifies the consequences of eating disorders and the need for early intervention and treatment

D.12.4 Demonstrate the ability to adapt healthy eating and physical activity messages and communication techniques to the characteristics of a particular audience, considering cultural and social perspectives

D.12.5 List the functions and food sources for key nutrients and the relationship of key nutrients to health and prevention of chronic disease

D.12.6 Describe how food choices are influenced by availability, individual and family preferences, and the media

E. DIVERSITY

CONTENT STANDARD

Students in Wisconsin will understand that nutritional status and health can be impacted by many factors, and healthy eating must be individualized to meet personal preferences and characteristics.

Rationale: The Wisconsin population is growing more diverse. Nutritional status is affected by the food choices available and the nutritional adequacy and appropriateness of the food available. In addition, diversity in body size and shape, economic resources and racial and ethnic background may influence and impact food choices.

PERFORMANCE GOALS

▶ ***BY THE END OF GRADE 4 STUDENTS WILL:***

E.4.1 Understand that people eat many different foods as part of a healthy diet

E.4.2 Recognize that people come in many shapes and sizes

E.4.3 Identify examples of cultures and their food customs and habits

E.4.4 Identify different dietary needs related to food allergies and medical conditions

E.4.5 Describe how food choices are influenced by availability, individual and family preferences, media and background

▶ *BY THE END OF GRADE 8 STUDENTS WILL:*

E.8.1 Locate supplier(s), source(s) or retail outlet(s) for ethnic foods within the community

E.8.2 Demonstrate respect for others body weight, size, shape, and abilities and identify factors that contribute to differences in people (genetics, lifestyle behaviors, age)

E.8.3 Describe the food customs and habits, or various cultures, and recognize that our culture, ethnicity and health status may impact our food choices

E.8.4 Discuss different dietary needs related to food allergies and medical conditions

▶ *BY THE END OF GRADE 12 STUDENTS WILL:*

E.12.1 Analyze the availability and variety of affordable and nutritionally adequate foods in the community, including ethnic and other local markets

E.12.2 Examine genetic and cultural connections to weight, size and body shape

E.12.3 Analyze how culture, family traditions and economic situations influence eating and activity behaviors

E.12.4 Evaluate the nutritional and health implications of eating habits of various cultures, economic situations, family traditions and lifestyles

E.12.5 Identify how social and cultural messages about food and eating influence nutrition choices

E.12.6 Provide examples of how our health status and belief system may impact our food choices

F. IDENTIFICATION AND CLASSIFICATION OF FOOD

CONTENT STANDARD

Students in Wisconsin will be able to appreciate and classify foods. They will also demonstrate an interest and appreciation for a variety of foods.

Rationale: Foods are classified in many ways. Awareness of the variety and types of foods available may increase willingness to try unfamiliar foods. Identifying and trying new foods is one of the first steps leading to knowledge of foods. Students who understand why foods are processed, and how foods change during processing establish a foundation for understanding how nutritional content can change with changes in form of a food.

PERFORMANCE GOALS

▶ ***BY THE END OF GRADE 4 STUDENTS WILL:***

F.4.1 Recognize foods by name

F.4.2 Describe different kinds of food (by physical and sensory characteristics — shape, taste, color, texture, etc)

F.4.3 Categorize foods by source (plant, animal), including processed foods

F.4.4 Identify the basic food groups, and give examples from each group for meals and snacks

▶ *BY THE END OF GRADE 8 STUDENTS WILL:*

F.8.1 Identify foods by food group and nutrient contributions

F.8.2 Use descriptive words and sensory characteristics to evaluate and classify foods

F.8.3 Identify processed foods by source (plants and animal products) and explain how food may change during processing

F.8.4 List the basic food groups, give examples from each group and use the food groups to plan a meal and snack

▶ *BY THE END OF GRADE 12 STUDENTS WILL:*

F.12.1 Identify foods by form, function and source (plant, animal)

F.12.2 Explain why foods are processed, analyze how foods change during processing (form, texture, additives, nutritional value), and describe how processed foods fit into a food guidance system

F.12.3 Describe the relationship between the food guidance system and the Dietary Standards for Americans

F.12.4 Explain the role of food manufacturing in a global economy, including the negative and positive ramifications of food processing and importing/exporting

Nutrition Facts, Definitions, and Tips

Selected terms from http://www.nutritiondata.com/help/glossary for an online dictionary of nutrition terms

Body Mass Index (BMI): Body Mass Index is a standardized ratio of weight to height, and is often used as a general indicator of health. Your BMI can be calculated by dividing your weight (in kilograms) by the square of your height (in meters). A BMI between 18.5 and 24.9 is considered normal for most adults. Higher BMI's may indicate that an individual is overweight or obese. BMI is a screening tool, and may be inaccurate due to muscle mass, bone mass, etc. 1 pound = kg; one inch = 2.54 cm

Calcium: Of all the essential minerals in the human body, Calcium is the most abundant. Calcium helps the body form bones and teeth and is required for blood clotting, transmitting signals in nerve cells, and muscle contraction. Calcium helps prevent osteoporosis; of the two to three pounds of calcium contained in the human body, 99% is located in the bones and teeth. Calcium also seems to play a role in lowering blood pressure, and has been shown to reduce the risk of cardiovascular disease in postmenopausal women.

Calorie: Calorie is a unit of measurement for energy. One calorie is formally defined as the amount of energy required to raise one cubic centimeter of water by one degree Centigrade. For purpose of measuring the amount of energy in food, nutritionists most commonly use kilocalories (equal to 1000 calories), and label the measurement either as "kcal" or as "Calories" with a capital "C". One kcal is also equivalent to approximately 4.184 kilojoules.

Carotenoids: Carotenoids are natural fat-soluble pigments found in certain plants. Carotenoids provide the bright red, orange, or yellow coloration of many vegetables, serve as antioxidants, and can be a source for vitamin A activity.

Cholesterol: Cholesterol is a soft, waxy substance present in all parts of the body including the nervous system, skin, muscle, liver, intestines and heart. It is both made by the body and obtained from animal products in the diet. Cholesterol is manufactured in the liver for normal body functions including the production of hormones, bile acid and Vitamin D. It is transported in the blood to be used by all parts of the body.

In the blood stream, cholesterol combines with fatty acids to form high-density (HDL) and low-density (LDL) lipoproteins. LDL's are considered the "bad cholesterol", since they can stick together to form plaque deposits on the walls of your blood vessels, leading to atherosclerosis.

One-fourth of the adult population in the U.S. has high blood cholesterol levels. More than half of the adult population has blood cholesterol levels that exceed the desirable range, as specified by the medical community. Elevated cholesterol often begins in childhood. Some children may be at higher risk than others due to a family history of high cholesterol.

Daily Values (DV): Daily Values are the dietary reference values that are used on all current US Nutrition Facts labels. These values were determined by the FDA to best represent the minimum needs of the general population. For many nutrients, DV's will exceed your actual minimum needs, since they conservatively allow for the minimum needs of more demanding conditions, such as pregnancy or lactation. Most DV's are derived from Dietary Reference Intakes (DRI) and other recommendations made by the Food and Nutrition Board, Institute of Medicine (IOM).

For use on food labels, Daily Values formally obsolete all other previous used references, including Daily Reference Values (DRV), Reference Daily Intakes (RDI), and Recommended Dietary Allowances (RDA).

Dietary Fiber: Dietary fiber comes from the thick cell wall of plants. It is an indigestible complex carbohydrate. Fiber is divided into two general categories: water soluble and water insoluble.

Soluble fiber has been shown to lower cholesterol. However, in many studies, the degree of cholesterol reduction was quite modest. For unknown reasons, diets higher in insoluble fiber (mostly unrelated to cholesterol levels) have been shown to correlate better with protection against heart disease in human trials. Soluble fibers can also lower blood sugar levels, and some doctors believe that increasing fiber decreases the body's need for insulin—a good sign for diabetics.

Insoluble fiber acts as a stool softener, which speeds digestion through the intestinal tract. For this reason, insoluble fiber is an effective treatment for constipation. The reduction in "transit time" has also been thought to partially explain the link between a high fiber diet and a reduced risk of colon cancer.

Enzyme: Enzymes are complex proteins that assist or enable chemical reactions to occur. "Digestive" enzymes, for example, help your body break food down into chemical compounds that can more easily be absorbed. Thousands of different enzymes are produced by your body.

Essential Amino Acids: Essential Amino Acids are amino acids that your body does not have the ability to synthesize. Hundreds of different amino acids exist in nature, and about two dozen of them are important to human nutrition. Nine of these – histidine, isoleucine, leucine, lysine, methionine, phenylalanine, theronine, tryptophan, and valine – are considered essential, since they must be supplied by your diet.

While the essential amino acids requirements vary among different individuals, the Food and Agricultural Organization of the United Nations (FAO) has proposed a standard that specifies the minimum amount of each essential amino acid that should be supplied per gram of protein consumed. This standard is the reference by which protein quality is determined. By comparing the limiting (i.e. lowest level) amino acid in a food with this standard, the amino acid score is determined. A score of 100 or above indicates a complete or high-quality protein; a score below 100 indicates a lower quality protein.

Minerals: The minerals (inorganic nutrients) that are relevant to human nutrition include water, sodium, potassium, chloride, calcium, phosphate, sulfate, magnesium, iron, copper, zinc, manganese, iodine, selenium, and molybdenum. Minerals are needed for growth, maintenance of body weight in adulthood, and for reproduction.

Nutrient Density: Nutrient density is the measurement of the amount of a nutrient per fixed portion of food. If you know the nutrient density of a food, you can better compare its nutritional value to that of other foods, regardless of serving size.

Potassium: Potassium is an essential mineral needed to regulate water balance, levels of acidity and blood pressure. Potassium, together with sodium-potassium inside the cell and sodium in the fluid surrounding the cell, work together for the nervous system to transmit messages as well as regulating the contraction of muscles.

People with low blood levels of potassium who are undergoing heart surgery are at an increased risk of developing heart arrhythmias and an increased need for cardiopulmonary resuscitation. Potassium is also required for carbohydrate and protein metabolism.

Protein: Protein is one of the basic components of food and makes all life possible. Amino acids are the building blocks of proteins. All of the antibodies and enzymes, and many of the hormones in the body are proteins. They provide for the transport of nutrients, oxygen and waste throughout the body. They provide the structure and contracting capability of muscles. They also provide collagen to connective tissues of the body and to the tissues of the skin, hair and nails.

Protein Quality: See Essential Amino Acids.

Satiety: Satiety refers to the feeling of satisfaction or "fullness" produced by the consumption of food.

Saturated Fat: A saturated fat is a fat or fatty acid in which there are no double bonds between the carbon atoms of the fatty acid chain. Saturated fats are usually solid at room temperature. Diets high in saturated fat have been shown to correlate with an increased incidence of atherosclerosis and coronary heart disease. Dehydrogenation converts saturated fats to unsaturated fats, while hydrogenation accomplishes the reverse.

Common saturated fats include butter, lard, palm oil, coconut oil, cottonseed oil and Palm Kernel Oil. Saturated fat is found in dairy products, especially cream and cheese and in meat, as well as in many prepared foods. Some studies suggest replacing saturated fats in the diet with unsaturated fats will increase one's ratio of HDL to LDL serum cholesterol.

Alternatives to saturated fats include monosaturated fats such as olive oil and polyunsaturated fats such as canola oil and corn oil.

Sodium: Sodium is a mineral, an essential nutrient. It helps to maintain blood volume, regulate the balance of water in the cells, and keeps nerves functioning. The kidneys control sodium balance by increasing or decreasing sodium in the urine. One teaspoon of salt contains about 2,300 milligrams of sodium, more than four times the amount the body requires per day.

Most Americans consume far more sodium than their bodies need. Many foods contain sodium naturally, and it is commonly added to foods during preparation or processing or as a flavoring agent. Sodium is also found in drinking water, prescription drugs and over-the-counter medications.

In the United States, about one in four adults have elevated blood pressure. Sodium intake is only one of the factors known to affect high blood pressure, and not everyone is equally susceptible. The sensitivity to sodium seems to be very individualized. Usually, the older one is the more sensitive they are to salt.

Soluble Fiber: See Dietary Fiber.

Trans-Fat: Trans fat (also known as *trans* fatty acids) is a specific type of fat formed when liquid oils are made into solid fats like shortening and hard margarine. However, a small amount of *trans* fat is found naturally, primarily in some animal-based foods. *Trans* fat behaves like saturated fat by raising low-density lipoprotein (LDL or "bad") cholesterol that increases your risk of coronary heart disease (CHD). *Trans* fat can be found in some of the same foods as saturated fat, such as vegetable shortenings, some margarines, crackers, candies, cookies, snack foods, fried foods, baked goods, and other processed foods made with partially hydrogenated vegetable oils.

Unsaturated Fat: An unsaturated fat is a fat or fatty acid in which there are one or more double bonds between carbon atoms of the fatty acid chain. Such fat molecules are monounsaturated if each contains one double bond, and polyunsaturated if each contain more than one.

Hydrogenation converts unsaturated fats to saturated fats, while dehydrogenation accomplishes the reverse. Unsaturated fats tend to melt at lower temperatures than saturated fats, which tend to be solid at room temperature.

Both kinds of unsaturated fat can replace saturated fat in the diet. Substituting unsaturated fats for saturated fats helps to lower levels of total cholesterol and LDL cholesterol in the blood

Vitamin A (Retinol): Vitamin A is a fat-soluble vitamin with multiple functions in the body. It helps cells differentiate, an essential part of cell reproduction. Cells that are not fully differentiated are more likely to undergo pre-cancerous changes. It is a central component for healthy vision; vitamin A nourishes cells in various structures of the eye and is required for the transduction of light into nerve signals in the retina. It is required during pregnancy, stimulating normal growth and development of the fetus by influencing genes that determine the sequential growth of organs in embryonic development. It influences the function and development of sperm, ovaries and placenta and is a vital component of the reproductive process.

Vitamin B1 (Thiamin): Vitamin B1 is a water-soluble vitamin that the body requires to break down carbohydrates, fat and protein. Every cell of the body requires vitamin B1 to form adenosine triphosphate (ATP). Vitamin B1 is also essential for the proper functioning of nerve cells.

Vitamin B2 (Riboflavin): Vitamin B2 is a water-soluble vitamin that helps the body process amino acids and fats, activate vitamin B6 and folic acid, and helps convert carbohydrates to adenosine triphosphate (ATP). Under some conditions, vitamin B2 can act as an antioxidant.

Vitamin B3 (Niacin): Vitamin B3 is required for cell respiration and helps release the energy in carbohydrates, fats, and proteins. It also supports proper circulation and healthy skin, functioning of the nervous system, and normal secretion of bile and stomach fluids. It is used in the synthesis of sex hormones, treating schizophrenia and other mental illnesses, and as a memory-enhancer.

Nicotinic acid (but not nicotinamide) supplementation improves the blood cholesterol profile, and has been used to flush the body of organic poisons, such as certain insecticides. People report more mental alertness when this vitamin is in sufficient supply.

A shortage of niacin may be indicated with symptoms such as canker sores, depression, diarrhea, dizziness, fatigue, halitosis, headaches, indigestion, insomnia, limb pains, loss of appetite, low blood sugar, muscular weakness, skin eruptions, and inflammation.

Vitamin B5 (Pantothenic Acid): Vitamin B5 is a water-soluble vitamin involved in the Kreb's energy production cycle and is needed for the production of acetylcholine, a neurotransmitter. Vitamin B5 also triggers the adrenal glands, is essential in transporting and releasing energy from fats, and enables the synthesis of cholesterol, vitamin D, and steroid hormones. Pantethine — a vitamin B5 byproduct — has been shown to lower cholesterol and triglycerides in the blood.

Vitamin B6: Vitamin B6 is a water-soluble vitamin and is part of the vitamin B complex. Vitamin B6 plays a role in the synthesis of antibodies by the immune system, which is needed to fight many diseases. It helps maintain normal nerve function and also acts in the formation of red blood cells. Vitamin B6 is also required for the chemical reactions needed to digest proteins. The higher the protein intake, the more vitamin B6 the body needs.

Large doses of vitamin B6 can cause neurological disorders and numbness. Deficiency of this vitamin can cause mouth and tongue sores, irritability, confusion, and depression. Vitamin B6 deficiency is uncommon in the United States.

Vitamin B9 (Folate): Vitamin B9, also known as Folic acid, is a B vitamin necessary for cell replication and growth. Folic acid helps form building blocks of DNA, which holds the body's genetic information, and building blocks of RNA, needed for protein synthesis. Folic acid is most important, then, for rapidly growing tissues, such as those of a fetus, and rapidly regenerating cells, like red blood cells and immune cells. Folic acid deficiency results in an anemia that responds quickly to folic acid supplements.

The need for folic acid increases considerably during pregnancy. Deficiencies of folic acid during pregnancy are associated with low birth weight and an increased incidence of neural tube defects in infants. Most doctors, many other healthcare professionals, and the March of Dimes recommend that all women of childbearing age supplement with 400 mcg per day of folic acid. Such supplementation may protect against the formation of neural tube defects during the time between conception and when pregnancy is discovered.

Vitamin B12 (Cobalamine): Vitamin B12 is a water-soluble vitamin needed for normal nerve cell activity, DNA replication, and production of the mood-affecting substance SAMe (S-adenosyl-L-methionine). Vitamin B12 acts with folic acid and vitamin B6 to control homocysteine levels. An excess of homocysteine has been linked to an increased risk of coronary disease, stroke and other diseases such as osteoporosis and Alzheimer's.

Vitamin B12 deficiency causes fatigue. A small trial reported that even some people who are not deficient in B12 showed a marked increase in energy after vitamin B12 injections. However, the relationship between B12 injections and the energy level of people who are not vitamin B12-deficient has been rarely studied. Oral B12 supplements are unlikely to achieve the same results as injectable B12, because the body has a relatively poor absorption rate for this vitamin.

Vitamin C (Ascorbic Acid): Vitamin C is an essential water-soluble vitamin that has a wide range of functions in the human body.

One of vitamin C's important functions is acting as an antioxidant, protecting LDL cholesterol from oxidative damage. When LDL is damaged the cholesterol appears to lead to heart disease, but vitamin C acts as an important antioxidant protector of LDL. Vitamin C may also protect against heart disease by reducing the stiffness of arteries and the tendency of platelets to coagulate in the vein.

The antioxidant properties also protect smokers from the harmful effects of free radicals. Small doses of Vitamin C taken by nonsmokers before being exposed to smoke have been shown to reduce the free radical damage and LDL cholesterol oxidation associated with exposure to cigarette smoke.

Vitamin C has a range of additional functions. It is needed to make collagen, a substance that strengthens many parts of the body, such as muscles and blood vessels, and plays important roles in healing and as an antihistamine. Vitamin C also aids in the formation of liver bile which helps to detoxify alcohol and other substances. Evidence indicates that

vitamin C levels in the eye decrease with age and that vitamin C supplements prevent this decrease, lowering the risk of developing cataracts.

Vitamin C has been reported to reduce activity of the enzyme, aldose reductase, which theoretically helps protect people with diabetes. It may also protect the body against accumulation or retention of the toxic mineral, lead.

Vitamin D (Cholecalciferol): Vitamin D is a fat-soluble vitamin that helps maintain blood levels of calcium, by increasing absorption from food and reducing urinary calcium loss. Both functions help keep calcium in the body and therefore spare the calcium that is stored in bones. Vitamin D may also transfer calcium from the bone to the blood, which may actually weaken bones. Though the overall effect of vitamin D on the bones is complicated, some vitamin D is certainly necessary for healthy bones and teeth.

Vitamin D is also produced by the human body during exposure to the ultraviolet rays of the Sun. However, seasonal changes, latitude, time of day, cloud cover, smog and sunscreen can all affect UV exposure. Vitamin D deficiency is more common in northern latitudes, making Vitamin D supplementation more important for residents of those areas.

Vitamin D plays a role in immunity and blood c**ell** formation and also helps cells differentiate—a process that may reduce the risk of cancer. From various other studies, researchers have hypothesized that vitamin D may protect people from multiple sclerosis, autoimmune arthritis, and juvenile diabetes. Vitamin D is also necessary to maintain adequate blood levels of insulin. Vitamin D receptors have been found in the pancreas, and some evidence suggests that supplements may increase insulin secretion for some people with adult-onset diabetes.

Vitamin E (Tocopherol): Vitamin E is an antioxidant that protects cell membranes and other fat-soluble parts of the body, such as LDL cholesterol (the "bad" cholesterol), from damage. Several studies have reported that supplements of natural vitamin E help reduce the risk of heart attacks.

Vitamin E also plays some role in the body's ability to process glucose. Some trials suggest that vitamin E may help in the prevention and treatment of diabetes.

In the last decade, the functions of vitamin E have been further clarified. In addition to its antioxidant functions, vitamin E has now been shown to directly affect inflammation, blood cell regulation, connective tissue growth and genetic control of cell division.

Vitamin K (Phylloquinone): Vitamin K is necessary for proper bone growth and blood coagulation. Vitamin K accomplishes this by helping the body transport calcium. Vitamin K is used to treat overdoses of the drug warfarin. Also, doctors prescribe vitamin K to prevent excessive bleeding in people taking warfarin but requiring surgery.

Nutrition and Nutrition Education Web Resources

Wisconsin Department of Public Instruction: http://dpi.wi.gov/ne/index.html

USDA Team Nutrition; –Wellness Policy Section; –Making It Happen
–Changing the Scene: http://teamnutrition.usda.gov/healthy-schools.html

School Nutrition Association (formerly American School Food Service Association) Keys to Excellence: www.schoolnutrition.org/keys

Action for Healthy Kids: www.actionforhealthykids.org

National Dairy Council: www.nationaldairycouncil.org

5 A Day: www.5aday.org

CDC Guidelines for School Health Programs to Promote Lifelong Healthy Eating
www.cdc.gov

American Dietetic Association: www.eatright.org

Physical Activity and Physical Education Resources
National Association for Sports and Physical Education (NASPE)
www.naspeinfo.org

National Association for Sports and Physical Education (NASPE)
Appropriate Practices in Movement Programs for Young Children 3-5
Appropriate Practices for Elementary School Physical Education
Appropriate Practices for Middle School Physical Education
Appropriate Practices for Secondary School Physical Education
http://www.aahperd.org/naspe/template.cfm?template=peappropriatepractice/index.html.

Active Start: A Statement of Physical Activity Guidelines for Children Birth to Five Years
Physical Activity for Children: A Statement of Guidelines for Children 5-12, 2nd Edition
http://www.aahperd.org/naspe/template.cfm?template=ns_index.html

Quality Physical Education:
http://www.aahperd.org/naspe/template.cfm?template=publications-nationalstandards_3.html

Recess Before Lunch: www.opi.state.mt.us/school-food/recessBL.html

CDC Guidelines for School and Community Programs to Promote Lifelong Physical Activity among Young People: www.cdc.gov

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