Grades 3–4



DIABETES EDUCATION IN TRIBAL SCHOOLS HEALTH IS LIFE IN BALANCE: GRADES 3-4

Department of Health & Human Services USA



NIDDK

NATIONAL INSTITUTE OF DIABETES AND DIGESTIVE AND KIDNEY DISEASES





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Diabetes Education in Tribal Schools

Dear Teacher,

Thank you for your interest in teaching the Diabetes Education in Tribal Schools (DETS) curriculum in your classroom.

Diabetes was rare among American Indian and Alaska Native peoples until about 50 years ago. Since then, diabetes has become one of the most common and serious illnesses in the Tribal Nations of North America. In 2003, almost 100,000 American Indian and Alaska Native adults, or nearly 13 percent of those receiving care from the Indian Health Service (IHS), were estimated to have diabetes. Prevalence rates vary by Tribal Nations, rising to 26 percent among the Plains Tribes (Centers for Disease Control [CDC], 2005). In a new and alarming turn of events, type 2 diabetes, typically considered an adult disorder, is now emerging in all populations of youth in the United States, including American Indian and Alaska Native populations. The National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) has determined that effective programs should be initiated to decrease the rising incidence and prevalence and the severe complications of diabetes in the American Indian and Alaska Native communities.

In response to these findings, NIDDK, the Centers for Disease Control and Prevention (CDC), Indian Health Service (IHS), Tribal Colleges and Universities (TCU), and the Tribal Leaders Diabetes Committee collaborated to develop this curriculum. The lessons are designed to enhance the understanding and appreciation of the problems of diabetes in American Indian and Alaska Native communities, to empower students to make healthy lifestyle choices, and to stimulate general student interest in diabetes-based science careers.

The DETS curriculum includes K–12, multidisciplinary units that are sequenced and interrelated to give a continuum of involvement with diabetes-based education. The curriculum is based on national education standards for the respective subject area, along with Native American cultural content. Teachers can assist in this critical prevention education effort while addressing the national content standards of their subject area. Culturally relevant activities are incorporated in the learning to increase the effectiveness of the diabetes prevention effort and to enhance students' cultural awareness.

The initial versions of the curriculum were tested in select K–12 schools to assess teacher acceptance and student reception of the message. Appropriate revisions followed before publication and distribution to schools serving American Indian and Alaska Native students.

The lessons are based on the BSCS 5E Instructional Model and feature multisubject integration. Each lesson includes learning activities that also serve as assessment tools. Activities promote active and collaborative learning, and are inquiry-based to help students develop problem-solving and critical-thinking skills.

The curriculum comes with a complete set of materials for both teachers and students, including printed materials and extensive background and resource information. It is distributed by the Indian Health Services at no cost to teachers. All materials may be copied for classroom use, but may not be sold.

Sincerely, The DETS Team





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Overview of the Diabetes Education in Tribal Schools Project

The Diabetes Education in Tribal Schools (DETS) project is part of a national effort to decrease the incidence of type 2 diabetes among American Indians and Alaska Natives, and also to improve the care of those who have type 2 diabetes. The DETS project is a K–12 curriculum that has a multidisciplinary approach and consists of units that incorporate national education standards, inquiry learning, and American Indian and Alaska Native cultural and community knowledge.

Background

The Tribal Leaders Diabetes Committee formed a partnership with the Indian Health Service (IHS) in 1998 as a result of the Special Diabetes Program for Indians. The Tribal Leaders Diabetes Committee challenged the National Institutes of Health (NIH) to develop a curriculum to teach diabetes science in tribal schools. This challenge brought together multiple funding partners.

In 2001, the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK), along with the Native Diabetes Wellness Program of the Centers for Disease Control and Prevention (CDC), and the Division of Diabetes Treatment and Prevention of the Indian Health Services (IHS), initiated a multiyear, national, K–12 curriculum project—Diabetes Education in Tribal Schools. This effort is a direct response to the recognition that type 2 diabetes is an epidemic in American Indian and Alaska Native communities.

Eight Tribal Colleges and Universities (TCU) were involved in this endeavor: Cankdeska Cikana Community College (Fort Totten, North Dakota); Fort Peck Community College (Poplar, Montana); Haskell Indian Nations University (Lawrence, Kansas); Keweenaw Bay Ojibwa Community College (Baraga, Michigan); Leech Lake Tribal College (Cass Lake, Minnesota); Northwest Indian College (Bellingham, Washington); Southwestern Indian Polytechnic Institute (Albuquerque, New Mexico); and Stone Child College (Box Elder, Montana).

Purpose

The purpose of the DETS project is to develop and implement a school-based diabetes curriculum that supports the integration of American Indian and Alaska Native cultural and community knowledge with diabetes-related scientific knowledge.

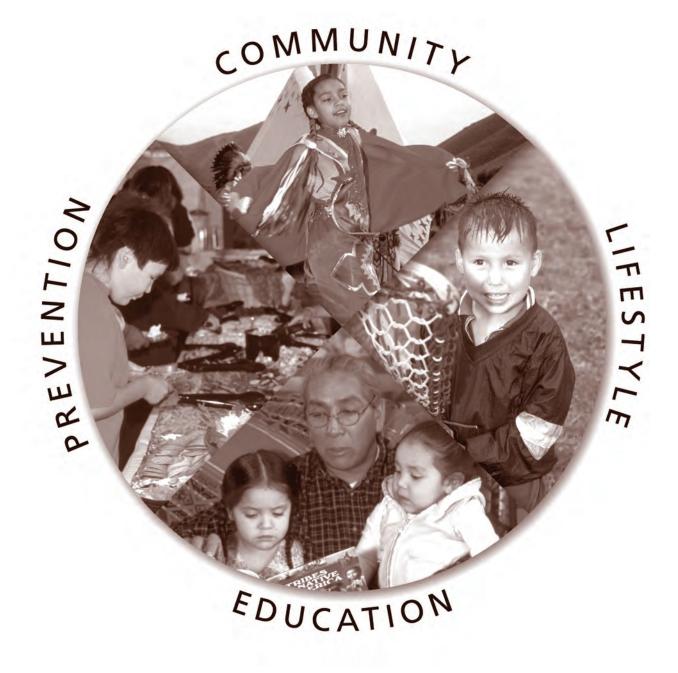


Goals of the DETS Project

The goals for the DETS project include the following:

- **1.** Increase the understanding of health, diabetes, and maintaining life in balance among American Indian and Alaska Native students.
 - a. Positive health is a continual process of maintaining life in balance.
 - b. Diabetes is an imbalance of health at many levels.
 - c. Some risk factors and imbalances contribute to the likelihood of diabetes.
 - d. Individuals, families, and communities can maintain health and balance and prevent type 2 diabetes risk.
- Increase American Indian and Alaska Native students' understanding and application of scientific and community knowledge about health, diabetes, and maintaining balance, and their understanding of the processes of the development of that knowledge.
 - a. Health, preventing and treating diabetes, and maintaining balance and enhancing health require both scientific and community knowledge.
 - b. Individuals, families, and communities can effectively apply scientific and community knowledge to maintain health and prevent type 2 diabetes.
 - c. Both scientific and community knowledge develop over time.
- **3.** Increase interest in science and health professions among American Indian and Alaska Native youth.
 - a. Science and health professionals can work with people and communities to prevent and care for type 2 diabetes.
 - b. American Indian and Alaska Native students can and do have future careers in science and health.

INTRODUCTORY INFORMATION





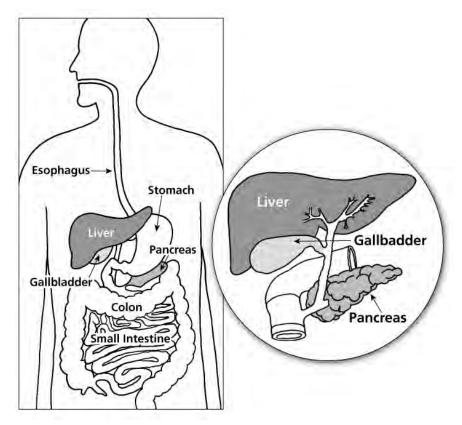
An Overview of Diabetes

Almost everyone knows someone who has diabetes. An estimated 20.8 million people in the United States—7.0 percent of the population—have diabetes, a serious, lifelong condition. Of those, 14.6 million have been diagnosed, and 6.2 million have not yet been diagnosed. In 2005, about 1.5 million people aged 20 or older were diagnosed with diabetes.

What Is Diabetes?

Diabetes is a disorder of metabolism—the way our bodies use digested food for growth and energy. Most of the food we eat is broken down into glucose, which is the form of sugar in the blood. Glucose is the main source of fuel for the body.

After digestion, glucose passes into the bloodstream, where it is used by cells for growth and energy. For glucose to get into most cells, insulin must be present. Insulin is a hormone produced by the pancreas, a large gland behind the stomach (figure I1).



For most people, when we eat, the pancreas automatically produces the right amount of insulin to move glucose from the blood into our cells. In people with diabetes, however, the pancreas either produces too little or no insulin, or the cells do not respond appropriately to the insulin that is produced. Glucose builds up in the blood, overflows into the urine, and passes out of the body in the urine. As a result, the body loses its main source of fuel even though the blood contains large amounts of glucose.

Figure I1: Digestive tract and pancreas.

What Are the Types of Diabetes?

The three main types of diabetes are

- type 1 diabetes,
- type 2 diabetes, and
- gestational diabetes.

Type 1 Diabetes

Type 1 diabetes is an autoimmune disease. An autoimmune disease results when the body's system for fighting infection (the immune system) turns against a part of the body. In diabetes, the immune system attacks and destroys the insulin-producing beta cells in the pancreas. The pancreas then produces little or no insulin. A person who has type 1 diabetes must take insulin daily to live.

At present, scientists do not know exactly what causes the body's immune system to attack the beta cells, but they believe that autoimmune, genetic, and environmental factors, possibly viruses, are involved. Type 1 diabetes accounts for about 5–10 percent of diagnosed diabetes cases in the United States. It develops most often in children and young adults but can appear at any age.

Type 2 Diabetes

The most common form of diabetes is type 2 diabetes. About 90–95 percent of people with diabetes have type 2. This form of diabetes most often occurs in adults and in people who are obese, have a family history of diabetes, have a previous history of gestational diabetes, are physically inactive, and are of certain ethnicities. About 80 percent of people with type 2 diabetes are overweight. Type 2 diabetes is increasingly being diagnosed in children and adolescents.

When type 2 diabetes is diagnosed, the pancreas is usually producing some insulin, but for unknown reasons the body cannot use the insulin effectively, a condition called insulin resistance. After several years, insulin production decreases. The result of this condition is the same as for type 1 diabetes—glucose builds up in the blood and the body cannot make efficient use of its main source of fuel.

The symptoms of type 2 diabetes develop gradually. Symptoms may include fatigue, frequent urination, increased thirst and hunger, weight loss, blurred vision, and slow healing of wounds or sores. It is also important to realize that some people have no symptoms.

Gestational Diabetes

Some women develop gestational diabetes late in pregnancy (figure I2). Although this form of diabetes usually disappears after the birth of the baby, women who have had gestational diabetes have a 20–50 percent chance of developing type 2 diabetes within five



Figure 12: Checking for gestational diabetes.

(Source: National Institute of Diabetes and Digestive and Kidney Diseases, National Institutes of Health)



to 10 years. Maintaining a reasonable body weight and being physically active may help prevent the development of type 2 diabetes.

How Is Diabetes Diagnosed?

The fasting blood glucose test is the usual test for diagnosing diabetes in children and nonpregnant adults. It is most reliable when performed in the morning. However, a diagnosis of diabetes can be made based on certain test results, which are confirmed by retesting on a different day.

What Is Pre-diabetes?

People with pre-diabetes have blood glucose levels that are higher than normal, but not high enough for a diagnosis of diabetes. This condition raises the risk of developing type 2 diabetes, heart disease, and stroke.

What Are the Scope and Impact of Diabetes?

Diabetes is widely recognized as one of the leading causes of death and disability in the United States. In 2005, it was the sixth-leading cause of death. However, diabetes is likely to be underreported as the underlying cause of death on death certificates. About 65 percent of deaths among those with diabetes are attributed to heart disease and stroke.

The high blood glucose levels of diabetes are associated with long-term complications that affect almost every part of the body. The disease may lead to blindness, heart and blood vessel disease, stroke, kidney failure, amputations, and nerve damage. Uncontrolled diabetes can complicate pregnancy, and birth defects are more common in babies born to women with diabetes. Diabetes also carries emotional, spiritual, and financial burdens for the individual, family, and community.

Who Gets Diabetes?

Diabetes is not contagious. People cannot "catch" it from each other. Certain factors can increase the risk of developing diabetes.

Type 1 diabetes occurs equally among males and females but is more common in whites than in non-whites. Data from the World Health Organization's Multinational Project

Figure I3: Prevalence data.

for Childhood Diabetes indicate that type 1 diabetes is rare in most African, American Indian, and Asian populations.

Type 2 diabetes is more common in adults, especially in people who are overweight. It occurs more often in African Americans, American Indians, some Asian Americans, Native Hawaiians and other Pacific Islander Americans, and Hispanic/ Latino Americans. On average, non-Hispanic African Americans are 1.8 times as likely to have diabetes as non-Hispanic whites of the same age. Mexican Americans are 1.7 times as likely to have diabetes as non-Hispanic whites of similar age. (Data are not available for estimating diabetes rates in other Hispanic/Latino American groups.)

Estimated age-adjusted total prevalence of diabetes in people aged 20 years or older, by race/ethnicity— United States, 2005—Percent of population American Indians/ Alaska Natives Non-Hispanic blacks Hispanic/Latino Americans Non-Hispanic whites 0 2 4 6 8 10 12 14 16 18 20

Source: For American Indians/Alaska Natives, the estimate of total prevalence was calculated using the estimate of diagnosed diabetes from the 2003 outpatient database of the Indian Health Service and the estimate of undiagnosed diabetes from the 1999–2002 National Health and Nutrition Examination Survey. For the other groups, 1999–2002 NHANES estimates of total prevalence (both diagnosed and undiagnosed) were projected to year 2005.

American Indians have one of the highest rates of diabetes in the world. On average, American Indians and Alaska Natives are 2.2 times as likely to have diabetes as non-Hispanic whites of similar age (figure I3). Although prevalence data for diabetes among Asian Americans and Pacific Islanders are limited, some groups, such as Native Hawaiians, Asians, and other Pacific Islanders residing in Hawaii (aged 20 or older) are more than twice as likely to have diabetes as white residents of Hawaii of similar age.

How Is Diabetes Managed?

Before the discovery of insulin in 1921, everyone with type 1 diabetes died within a few years after diagnosis. Although insulin is not considered a cure, its discovery was the first major breakthrough in diabetes treatment.



Figure I4:

Keeping track of glucose levels. Source: National Institute of Diabetes and Digestive and Kidney Diseases, National Institutes of Health.



Today, healthy eating, physical activity, and taking insulin are the basic therapies for type 1 diabetes. The amount of insulin must be balanced with food intake and daily activities. Blood glucose levels must be closely monitored through frequent blood glucose checking (figure I4).

Healthy eating, physical activity, and blood glucose testing are the basic management tools for type 2 diabetes. In addition, many people with type 2 diabetes require oral medication, insulin, or both to control their blood glucose levels.

People with diabetes must take responsibility for their day-to-day care. Much of the daily care involves keeping blood glucose levels from going too low or too high. When blood glucose levels drop too low—a condition known as hypoglycemia—a person can become nervous, shaky, and confused. Judgment can be impaired, and if blood glucose falls too low, fainting can occur. A person can also become ill if blood glucose levels rise too high, a condition known as hyperglycemia. The goal of diabetes management is to keep levels of blood glucose, blood pressure, and cholesterol as close to the normal range as safely possible.

How Can People Lower Their Risk of Diabetes?

People can do a lot to lower their risk. Some ways to do that include the following:

- Reach and maintain a reasonable body weight
- Make wise food choices most of the time
- Be physically active every day (figure I5)

Doing these things can reduce the risk of developing type 2 diabetes.



Figure 15: It's important to exercise every day. Source: National Institute of Diabetes and Digestive and Kidney Diseases, National Institutes of Health.

Solutions through Research

In 1996, NIDDK launched its Diabetes Prevention Program (DPP). The goal of this research effort was to learn how to prevent or delay type 2 diabetes in people with prediabetes, a strong risk factor for type 2 diabetes. The findings of the DPP, released in August 2001, showed that people at high risk for type 2 diabetes could sharply lower their chances of developing the disorder through diet and exercise. In addition, results of the oral diabetes drug metformin had a smaller reduction of diabetes risk.

In other research before the DPP, with the help and participation of many Akimel O'odham (Pima) Indians over the years, scientists at the National Institutes of Health identified several ways people with diabetes can improve their health. Scientists found that keeping blood glucose, blood pressure, and blood cholesterol under control is very important. Pregnant women with diabetes need to keep their blood glucose under control so that their babies will be healthy and have a lower risk of getting diabetes. Breastfeeding, even for a few weeks, helps protect babies from becoming overweight and developing diabetes.

Many people who might otherwise develop type 2 diabetes can prevent it by exercising regularly, lowering the amount of fat and number of calories they eat, and losing weight if they are overweight. Researchers are also studying the genetic and environmental factors that can lead to pre-diabetes and diabetes. About 100 tribes are evaluating demonstration programs to reduce the risk of developing type 2 diabetes or of developing heart disease, a complication of high blood glucose of diabetes that is not well controlled.

Adapted with permission from the National Institute of Diabetes and Digestive and Kidney Diseases, National Institutes of Health.



Life in Balance

Though belief systems vary with every tribe, striving for harmony and balance in life seems central to many American Indians. Harmony and balance is the American Indian belief in interrelatedness and connectedness with all that is natural. The concept not only explains the interdependence of humans with other animates and inanimates in the world, but it also recognizes the need for individual wellness—of the interdependence of physical, emotional, psychological, and spiritual well-being.

Individuals are considered whole when their physical, mental, spiritual, and emotional selves exist in harmony. If there is something negative going on with one part of the self, it affects the other parts and causes an imbalance in the whole self. (Cleary & Peacock, 1998)

Overview

The Diabetes Education in Tribal Schools (DETS) curriculum is part of a national effort to decrease the incidence of type 2 diabetes among American Indians and Alaska Natives and to improve the care of people in these populations who already have the disease. The overarching goal of the multidisciplinary curriculum is to increase the understanding of health, diabetes, and maintaining life in balance. The curriculum recognizes that students bring to the classroom cultural values, and prior knowledge and experience in connection with health and diabetes.

American Indian and Alaska Native cultures embody many generations of oral traditions and stories that encompass values and sense of place. Among many other contributions, American Indians and Alaska Native peopls developed diverse belief systems and social structures; sophisticated and imaginative forms of art; agriculture; architecture; and earth sciences. The challenge of incorporating into teaching American Indian and Alaska Native cultures demands sensitivity to the unique features represented in the diverse array of over 560 federally recognized American Indian and Alaska Native tribes, and many other state and federally nonrecognized tribes. The DETS curriclum incorporates dance, oral history, storytelling, and the circle of balance to reflect American Indian and Alaska Native cultural teaching of prior and new knowledge.

The Round Dance and Powwows

The Round Dance goes by many names for different tribes: *Kahomni*, 2-Step, Owl Dance, or Rabbit Dance. It is a social dance that is often a part of American Indian gatherings, including community social dances, ceremonies, and powwows.

A powwow is a celebration where people gather to sing, dance, see family and friends, conduct honor ceremonies, and compete in singing and dancing. Powwows take place all

over the United States and Canada. During the summer months, there is usually a powwow every weekend in different areas of the United States.

Oral History and Storytelling

American Indian and Alaska Native cultures are filled with tradition. These cultures have sustained their traditions through oral history or storytelling. Oral history is a significant method in Native cultures where wisdom is passed down through tribal elders and leaders and through members of the extended family, such as grandparents and great-grandparents. The practice of storytelling developed over many centuries to teach life lessons and traditional Native values as well as to preserve tribal history.

Families pass their culture on to their children by socializing them to become participating members in that culture through the oral tradition—the spoken word. Within American Indian and Alaska Native communities, knowledge is transmitted through the stories, legends, and prayers. Native people's sense of self is embedded in their languages and the stories that hold the promises for a good life.

The written stories in the DETS curriculum are narratives that are culturally based. They are recitations of an individual's way to a balanced life, and they are written with concern for the well-being of the next generation. These stories are meant to help others understand that they can live a balanced, healthy life, and that living a healthy life is a positive journey.

Circle of Balance

In recognizing and honoring cultural diversity, there are common themes: unity and balance in life, a profound sense of place, and strong values of family and community. The framing and relationship of place and balance interlock and are embedded within a spiritual and ecological-wisdom orientation—they are inseparable for Native peoples. Stewardship and the connectedness of self, community, and all that Mother Earth nurtures portray an integrated approach intrinsic to Native peoples. The premise of the circle of balance is that it is the foundation and the energy for all things.

The Circle of Balance is integrated multiple times within the curriculum. This interconnected approach for *self* is a metaphoric template that allows for the systematic discovery of balance within self and with the surrounding world. For Native people, the Circle of Balance is illustrated by four quadrants: spiritual, physical, emotional, and mental. This conceptual division helps frame the complexity of self in manageable ways, opening the way for reflection on how each quadrant interacts with the others that make up the circle. These four quadrants are always evolving throughout an individual's life span.



The DETS curriculum uses an integrated theme in illustrating the contextual content of Native culture throughout the units. Threading Native cultural themes and concepts throughout the K–12 curriculum provides a meaningful approach for students of all cultural backgrounds to understand their self-identity and expand it in ever-widening circles to include others. As students become engaged with their own cultural backgrounds, beliefs, attitudes, and ways of life, their engagement allows for connectedness and an understanding that *health is life in balance*.

Science as Inquiry

When teachers talk about inquiry in the science classroom, many images come to mind. We like to see students doing science. But inquiry is much more than conducting investigations. We want students to be able to ask scientifically testable questions, design appropriate investigations to answer those questions, and develop explanations based on the evidence they collect. We also want them to be able to consider alternative explanations and use math and technology to help them answer questions when appropriate.

In addition to being able to practice science, we want students to understand the nature of science. We want them to realize that science advances through logical skepticism, that different areas in science lead to different types of questions, and that people from different backgrounds and different ways of life have contributed to the scientific knowledge we have today.

When we think about what inquiry looks like in the science classroom, it is helpful to consider the work of the National Research Council. Following the release of the *National Science Education Standards* (National Research Council [NRC], 1996), the council also developed several addenda to further explore some fundamental ideas inherent in the standards. In one of the addenda, the National Research Council (2000, pp. 24–27) outlines five essential features of inquiry that define inquiry in the classroom across all grade levels. We provide this useful discussion here:

Essential Feature 1: Learners are engaged by scientifically oriented questions.

Scientifically oriented questions center on objects, organisms, and events in the natural world; they connect to the science concepts described in the content standards. They are questions that lend themselves to empirical investigation and lead to gathering and using data to develop explanations for scientific phenomena. Scientists recognize two primary kinds of scientific questions. Existence questions probe origins and include many "why" questions. Why do objects fall toward the earth? Why do some rocks contain crystals? Why do humans have chambered hearts? Many "why" questions cannot be addressed by science. There are also causal/functional questions, which probe mechanisms and include most of the "how" questions. How does sunlight help plants to grow? How are crystals formed?

Students often ask "why" questions. In the context of school science, many of these questions can be changed into "how" questions and thus lend themselves to scientific inquiry. Such change narrows and sharpens the inquiry and contributes to its being scientific.



In the classroom, a question robust and fruitful enough to drive an inquiry generates a "need to know" in students, stimulating additional questions of "how" and "why" a phenomenon occurs. The initial question may originate from the learner, the teacher, the instructional materials, the Web, some other source, or some combination. The teacher plays a critical role in guiding the identification of questions, particularly when they come from students. Fruitful inquiries evolve from questions that are meaningful and relevant to students, but they also must be able to be answered by students' observations and scientific knowledge they obtain from reliable sources. The knowledge and procedures students use to answer the students' developmental level. Skillful teachers help students focus their questions so that they can experience both interesting and productive investigations.

Essential Feature 2: Learners give priority to *evidence*, which allows them to develop and evaluate explanations that address scientifically oriented questions.

As the *Standards* note, science distinguishes itself from other ways of knowing through use of empirical evidence as the basis for explanations about how the natural world works. Scientists concentrate on getting accurate data from observations of phenomena. They obtain evidence from observations and measurements taken in natural settings such as oceans, or in contrived settings such as laboratories. They use their senses, instruments such as telescopes to enhance their senses, or instruments that measure characteristics that humans cannot sense, such as magnetic fields. In some instances, scientists can control conditions to obtain their evidence; in other instances, they cannot control the conditions or control would distort the phenomena, so they gather data over a wide range of naturally occurring conditions and over a long enough period of time so that they can infer what the influence of different factors might be. The accuracy of the evidence gathered is verified by checking measurements, repeating the observations, or gathering different kinds of data related to the same phenomenon. The evidence is subject to questioning and further investigation.

The above paragraph explains what counts as evidence in science. In their classroom inquiries, students use evidence to develop explanations for scientific phenomena. They observe plants, animals, and rocks, and carefully describe their characteristics. They take measurements of temperature, distances, and time, and carefully record them. They observe chemical reactions and moon phases and chart their progress. Or they obtain evidence from their teacher, instructional materials,

the Web, or elsewhere, to "fuel" their inquiries. As the *Standards* note, "explanations of how the natural world changes based on myths, personal beliefs, religious values, mystical inspiration, superstition, or authority may be personally useful and socially relevant, but they are not scientific."

Essential Feature 3: Learners formulate explanations from evidence to address scientifically oriented questions.

Although similar to the previous feature, this aspect of inquiry emphasizes the path from evidence to explanation rather than the criteria for and characteristics of the evidence. Scientific explanations are based on reason. They provide causes for effects and establish relationships based on evidence and logical argument. They must be consistent with experimental and observational evidence about nature. They respect rules of evidence, are open to criticism, and require the use of various cognitive processes generally associated with science—for example, classification, analysis, inference, and prediction, and general processes such as critical reasoning and logic.

Explanations are ways to learn about what is unfamiliar by relating what is observed to what is already known. So, explanations go beyond current knowledge and propose some new understanding. For science, this means building upon the existing knowledge base. For students, this means building new ideas upon their current understandings. In both cases, the result is proposed new knowledge. For example, students may use observational and other evidence to propose an explanation for the phases of the moon; for why plants die under certain conditions and thrive in others; and for the relationship of diet to health.

Essential Feature 4: Learners evaluate their explanations in light of alternative explanations, particularly those reflecting scientific understanding.

Evaluation, and possible elimination or revision of explanations, is one feature that distinguishes scientific from other forms of inquiry and subsequent explanations. One can ask questions such as: Does the evidence support the proposed explanation? Does the explanation adequately answer the questions? Are there any apparent biases or flaws in the reasoning connecting evidence and explanation? Can other reasonable explanations be derived from the evidence?

Alternative explanations may be reviewed as students engage in dialogues, compare results, or check their results with those proposed by the teacher or instructional materials. An essential component of this characteristic is ensuring that students make the connection between their results and scientific knowledge



appropriate in their level of development. That is, student explanations should ultimately be consistent with currently accepted scientific knowledge.

Essential Feature 5: Learners communicate and justify their proposed explanations.

Scientists communicate their explanations in such a way that their results can be reproduced. This requires clear articulation of the question, procedures, evidence, proposed explanation, and review of alternative explanations. It provides for further skeptical review and the opportunity for other scientists to use the explanation in work on new questions.

Having students share their explanations provides others the opportunity to ask questions, examine evidence, identify faulty reasoning, point out statements that go beyond the evidence, and suggest alternative explanations for the same observations. Sharing explanations can bring into question or fortify the connections students have made among the evidence, existing scientific knowledge, and their proposed explanations. As a result, students can resolve contradictions and solidify an empirically based argument.

Essential Features of Classroom Inquiry and Their Variations

	Less More	Learner Sel		More Less
Feature				
1. Learner engages in scientifically oriented questions	A. Learner engages in question provided by teacher, materials, or other source	B. Learner sharpens or clarifies question provided by teacher, materials, or other source	C. Learner selects among questions, poses new questions	D. Learner poses a question
2. Learner gives priority to evidence in responding to questions	A. Learner given evidence (data) and told how to analyze	B. Learner given evidence (data) and guided in how to analyze it	C. Learner directed to collect certain evidence and asked to analyze	D. Learner determines what constitutes evidence, how to collect it, and how to analyze it
3. Learner formulates explanations from evidence	A. Learner provided with evidence and explanation	B. Learner given possible ways to use evidence to formulate an explanation	C. Learner guided in process of formulating explana- tions from evidence	D. Learner formulates explanation after summarizing evidence
4. Learner connects explanations to scientific knowledge	A. Learner given all connections between explanations and existing scientific knowledge	B. Learner given possible connections between explanations and existing scientific knowledge	C. Learner directed toward areas and sources of scientific knowledge in order to make connections to explanations	D. Learner independently examines other resources and forms connections to explanations
5. Learner communi- cates and justifies explanations	A. Learner given steps and procedures to justify and communicate explanations	B. Learner provided guidelines to justify and communicate explanations	C. Learner coached to form reasonable and logical arguments to justify and communicate explanations	D. Learner forms reasonable and logical arguments to justify and communicate explanations

Figure I6:

Essential features of classroom inquiry and their variations. (NRC, 2000)



BSCS 5E Instructional Model

The instruction of major concepts is organized around an instructional model that is based on the constructivist philosophy of learning. This philosophy of learning maintains that learners build or construct new ideas on top of their old ideas.

We call the instructional model the "5Es" because each unit is organized around five phases of learning that can best be described by using five words that begin with *E*: Engage, Explore, Explain, Elaborate, and Evaluate. This instructional model allows students to use and build on prior knowledge and experience, to experience common activities, to construct meaning, and to assess their understanding of a concept continually:

- Engage: This phase of the instructional model initiates the learning. The activity should (1) activate prior knowledge and help students make connections between past and present learning experiences and (2) anticipate activities and focus students' thinking on the learning outcomes of upcoming activities. The learner should become mentally engaged in the concept, process, or skill to be explored.
- Explore: This phase of the instructional model provides students with a common set of experiences within which they identify and develop current concepts, processes, and skills. During this phase, students actively explore their environment or manipulate materials.
- Explain: This phase of the instructional model focuses learners on developing an explanation for the concepts they have been exploring. As a result, they have opportunities to verbalize their conceptual understanding or to demonstrate their skills or behaviors. This phase also provides opportunities for teachers to introduce formal labels, definitions, and explanations for concepts, processes, skills, or behaviors.
- Elaborate: This phase of the instructional model challenges and extends students' conceptual understanding, and it allows further opportunity for students to practice desired skills and behaviors. Through new experiences, the learners develop deeper and broader understanding of major concepts, obtain more information about areas of interest, and refine their scientific skills.
- Evaluate: This phase of the instructional model encourages learners to assess their understanding and abilities and provides opportunities for teachers to evaluate students' understanding of key concepts and development of essential skills.

Stage of the Instructional Model	The BSCS 5E Instructional Model: What the Teacher Does			
	That Is Consistent with This Model	That Is Inconsistent with This Model		
Engage	 Creates interest Generates curiosity Raises questions Elicits responses that uncover what the students know or think about the concept or topic 	 Explains concepts Provides definitions and answers States conclusions Provides closure Lectures 		
Explore	 Encourages the students to work together without direct instruction from the teacher Observes and listens to the students as they interact Asks probing questions to redirect the students' investigations when necessary Provides time for the students to puzzle through problems Acts as a consultant for students 	 Provides answers Tells or explains how to work through the problem Provides closure Tells the students that they are wrong Gives information or facts that solve the problem Leads the students step-by-step to a solution 		
Explain	 Encourages the students to explain concepts and definitions in their own words Asks for justification (evidence) and clarification from students Formally provides definitions, explanations, and new labels Uses students' previous experiences as the basis for explaining concepts 	 Accepts explanations that have no justification Neglects to solicit the students' explanations Introduces unrelated concepts or skills 		
Elaborate	 Expects the students to use formal labels, definitions, and explanations provided previously Encourages the students to apply or extend the concepts and skills in new situations Reminds the students of alternative explanations Refers the students to existing data and evidence and asks, "What do you already know?" "Why do you think?" (Strategies from Explore apply here also.) 	 Provides definitive answers Tells the students that they are wrong Lectures Leads students step-by-step to a solution Explains how to work through the problem 		
Evaluate	 Observes the students as they apply new concepts and skills Assesses students' knowledge, skills, or both Looks for evidence that the students have changed their thinking or behaviors Allows students to assess their own learning and group-process skills Asks open-ended questions such as, Why do you think? What evidence do you have? What do you know about <i>x</i>? How would you explain <i>x</i>? 	 Tests vocabulary words, terms, and isolated facts Introduces new ideas or concepts Creates ambiguity Promotes open-ended discussion unrelated to the concept or skill 		

Figure 17: BSCS Instructional Model: What the Teacher Does. © 2008 BSCS. Reprinted with permission.

Stage of the Instructional Model	The BSCS 5E Instructional Model: What the Student Does			
	That Is Consistent with This Model	That Is Inconsistent with This Model		
Engage	 Asks questions such as, Why did this happen? What do I already know about this? What can I find out about this? Shows interest in the topic 	 Asks for the "right" answer Offers the "right" answer Insists on answers or explanations Seeks one solution 		
Explore	 Thinks freely, but within the limits of the activity Tests predictions and hypotheses Forms new predictions and hypotheses Tries alternatives and discusses them with others Records observations and ideas Suspends judgment 	 Lets others do the thinking and exploring (passive involvement) Works quietly with little or no interaction with others (only appropriate when exploring ideas or feelings) "Plays around" indiscriminately with no goal in mind Stops with one solution 		
Explain	 Explains possible solutions or answers to others Listens critically to others' explanations Questions others' explanations Listens to and tries to comprehend explanations that the teacher offers Refers to previous activities Uses recorded observations in explanations 	 Proposes explanations from "thin air" with no relationship to previous experiences Brings up irrelevant experiences and examples Accepts explanations without justification Does not attend to other plausible explanations 		
Elaborate	 Applies new labels, definitions, explanations, and skills in new but similar situations Uses previous information to ask questions, propose solutions, make decisions, and design experiments Draws reasonable conclusions from evidence Records observations and explanations Checks for understanding among peers 	 "Plays around" with no goal in mind Ignores previous information or evidence Draws conclusions from "thin air" In discussion, uses only those labels that the teacher provided 		
Evaluate	 Answers open-ended questions by using observations, evidence, and previously accepted explanations Demonstrates an understanding or knowledge of the concept or skill Evaluates his or her own progress and knowledge Asks related questions that would encourage future investigations 	 Draws conclusions, not using evidence or previously accepted explanations Offers only yes-or-no answers and memorized definitions or explanations as answers Fails to express satisfactory explanations in his or her own words Introduces new, irrelevant topics 		

Figure 18: BSCS Instructional Model: What the Student Does. © 2008 BSCS. Reprinted with permission.

Glossary

A1c: A test that measures a person's average blood glucose concentration over the past two to three months. Glucose sometimes joins with hemoglobin, the protein in red blood cells that carries oxygen. The A1c test shows the amount of glucose joined to hemoglobin, which is proportional to the amount of glucose in the blood. Also called hemoglobin A1c.

adult-onset diabetes: A term formerly used for type 2 diabetes.

balance: In general, being in harmony with the rest of one's world—physically, mentally, emotionally, and spiritually. In medicine and health, a similar concept: actively keeping major functions of the body within a narrow range or maintaining equilibrium. *See* homeostasis.

blood glucose: The main sugar found in the blood and the body's main source of energy. Also called blood sugar.

blood glucose concentration (level): The amount of glucose in a given amount of blood. It is noted in milligrams per deciliter, or mg/dL.

blood glucose meter: A small, handheld device used by people with diabetes to check their blood glucose concentration. The meter displays the blood glucose level as a number on the meter's digital display.

blood sugar: A popular term for glucose in the blood. This term is less accurate than blood glucose.

body mass index (BMI): A measure used to evaluate body weight relative to a person's height. For adults, BMI is used to find out if a person is underweight, normal weight, overweight, or obese. For teens and children, BMI is evaluated differently. For more information, go to the Centers for Disease Control Web site, http://www.cdc.gov/nccdphp/dnpa/bmi/.

borderline diabetes: A term formerly used for early type 2 diabetes or pre-diabetes. *See* pre-diabetes.

calorie: The amount of heat energy required to raise the temperature of 1 gram of water 1 degree Celsius. In this usage, calorie is spelled with a lowercase *c*. The food Calorie (written with a capital *C*) is actually a kilocalorie, or 1,000 calories. The Calorie is an indication of the amount of energy contained in food. The Calorie content written on food labels is actually kilocalories.

carbohydrate: One of the three main nutrients in food. Carbohydrates make up sugar, starch, and cellulose. Foods that provide carbohydrates include starches, vegetables, fruits, dairy products, and sugars.



certified diabetes educator (CDE): A health professional with expertise in diabetes education who has met eligibility requirements and successfully completed a certification exam. *See* diabetes educator.

coma: A sleeplike state in which a person is not conscious. In people who have diabetes, it may be caused by *hyperglycemia* (high blood glucose) or *hypoglycemia* (low blood glucose). **concentration:** The amount of a substance in a specified volume of liquid or air.

deciliter (dL): A volume equal to one-tenth of a liter, or 100 milliliters. In diabetes, blood glucose concentrations are often measured as the number of milligrams of glucose in a deciliter of blood.

diabetes educator: A health professional who teaches people who have diabetes how to manage their diabetes. Diabetes educators work in hospitals, physicians' offices, managed care organizations, home health care, and other settings.

diabetes mellitus: A condition characterized by high blood glucose concentrations. Diabetes mellitus can be classified as either type 1 or type 2. Diabetes may cause serious health problems, such as heart disease, stroke, kidney failure, blindness, or amputations.

Diabetes Prevention Program (DPP): A study by the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) conducted from 1998 to 2001 in people at high risk for type 2 diabetes. All study participants had impaired glucose tolerance (also called prediabetes) and were overweight. Basic information about the DPP and its results can be found at the NIDDK Web site, http://diabetes.niddk.nih.gov/dm/pubs/preventionprogram/.

dialysis: The process of cleaning wastes from the blood by a dialysis machine. The kidneys usually perform this function.

dietitian: A health professional who advises people about meal planning, weight control, and diabetes management. A registered dietitian (RD) has met eligibility requirements and successfully completed a certification exam.

digestion: The process of making food absorbable by mechanically and enzymatically breaking it down into simpler chemical compounds. Digestion begins in the mouth and continues in the esophagus, stomach, and intestines.

epidemic: An outbreak of disease affecting a large number of people at the same time. Or a disease that increases suddenly in numbers that exceed what is expected.

fasting blood glucose test: A medical test of the body's ability to metabolize glucose that is used to diagnose diabetes or pre-diabetes. It is also used to monitor people who have diabetes.

fat: 1. One of the three main nutrients in food. Foods that provide fat include butter, margarine, salad dressing, oil, nuts, meat, poultry, fish, and some dairy products. 2. Excess calories are stored as body fat, providing the body with a reserve supply of energy and other functions.

gestational diabetes mellitus: A type of diabetes mellitus that develops only during pregnancy and usually disappears upon delivery. Gestational diabetes increases the risk that the mother will develop diabetes later. It is managed with meal planning, activity, and, in some cases, insulin.

glucagon: A hormone produced in the pancreas. It is released in response to decreases in the blood glucose concentration. Glucagon acts to increase blood glucose by stimulating the breakdown of glycogen and the synthesis of glucose.

glucose: A simple sugar with the chemical formula $C_6H_{12}O_6$. Glucose is the main type of sugar used by cells.

glycogen: The chief carbohydrate used by animals for energy storage.

homeostasis: A fundamental characteristic of living systems; the tendency of an organism to maintain a stable, constant internal environment.

hormone: A regulatory chemical secreted by cells or glands and carried through the blood. Hormones act on specific target cells and organs elsewhere in the body to elicit a response; a chemical messenger.

hyperglycemia: Indicates excessive blood glucose.

hypoglycemia: A condition that occurs when blood glucose levels are lower than normal. Signs include hunger, nervousness, shakiness, perspiration, dizziness or light-headedness, sleepiness, and confusion. If left untreated, hypoglycemia may lead to unconsciousness.

impaired fasting glucose (IFG): A condition in which a blood glucose test, taken after an eight- to 12-hour fast, shows a level of glucose higher than normal but not high enough for a diagnosis of diabetes. IFG is one of two conditions (with impaired glucose tolerance) that are the basis for a diagnosis of pre-diabetes. *See* impaired glucose tolerance (IGT) and pre-diabetes.

impaired glucose tolerance (IGT): A condition in which blood glucose concentrations are higher than normal but not high enough for a diagnosis of diabetes. IGT is one of two conditions (with impaired fasting glucose) that are the basis for a diagnosis of pre-diabetes. Terms for IGT that are no longer used include borderline, subclinical, chemical, or latent diabetes. *See* impaired fasting glucose (IFG) and pre-diabetes.



insulin: A hormone produced by the pancreas and released in response to elevated blood glucose concentrations. Insulin decreases blood glucose by increasing the uptake and use of glucose by cells.

insulin-dependent diabetes mellitus: A term formerly used for type 1 diabetes.

insulin receptors: Specific proteins on the cell membrane that binds to insulin and trigger a series of biochemical events that result in the uptake of glucose into the cell. *See* receptor.

insulin resistance: The body's inability to respond to and use the insulin produced by the pancreas. Insulin resistance is linked to obesity, hypertension, and high levels of fat in the blood.

juvenile diabetes: A term formerly used for type 1 diabetes.

kidney failure: A chronic condition in which the kidneys do not work properly, causing the body to retain fluid and harmful wastes to build up. A person with kidney failure needs dialysis or a kidney transplant.

kidneys: The two organs that regulate water and salt levels, filter water and wastes from the blood, and get rid of the end products as urine.

liver: The body organ that changes food into energy, removes alcohol and poisons from a person's blood, and makes bile, a substance that breaks down fat and helps rid the body of wastes.

metabolism: The sum of all chemical and physical processes within a living organism. Specifically, all of the chemical changes in living cells by which energy is provided for vital processes and activities and new material are assimilated.

noninsulin-dependent diabetes mellitus: A term formerly used for type 2 diabetes.

nutritionist: A person with training in nutrition. A nutritionist may or may not have specialized training or qualifications. *See* dietitian.

obesity: A condition in which the body has a greater than normal amount of fat. Obesity is more a severe condition than being overweight. In adults, obesity is defined as a body mass index (BMI) of 30 or more.

oral glucose tolerance test (OGTT): A test used to diagnose pre-diabetes and diabetes. The oral glucose tolerance test is given by a health professional after an overnight fast. After a blood sample is taken, the patient drinks a high-glucose beverage. Blood samples are taken during the three hours after drinking the glucose beverage. Test results are compared with a standard and show how the body uses glucose over time.

overweight: Having an above-normal body weight. In adults, being overweight means having a body mass index (BMI) of 25–29.9.

pancreas: The body organ that makes the hormones insulin and glucagon, as well as some enzymes used in digestion. The pancreas is located behind the lower part of the stomach and is about the size of a hand.

pre-diabetes: A condition in which blood glucose levels are higher than normal but are not high enough for a diagnosis of diabetes. People with pre-diabetes are at increased risk for type 2 diabetes, heart disease, and stroke. Pre-diabetes is diagnosed by having impaired fasting glucose, impaired glucose tolerance, or both. *See* impaired fasting glucose (IFG) *and* impaired glucose tolerance (IFT).

protein: 1. One of the three main nutrients in food. Foods that provide protein include meat, poultry, fish, cheese, milk, dairy products, eggs, and dried beans. 2. Proteins are produced in the body for cell structure, hormones such as insulin, and other functions.

receptor: A molecule (membrane protein) that recognizes specific chemicals, including hormones, neurotransmitters, or other body chemicals. When the hormone or other body chemical binds to its receptor, a biological response is triggered in the cells. *See* insulin receptors.

sucrose: A double sugar or disaccharide composed of glucose and fructose. Known as table sugar or white sugar, it is found naturally in sugarcane and in beets.

sugar: 1. A class of carbohydrates with a sweet taste; includes glucose, fructose, and sucrose. 2. A term used to refer to blood glucose.

Adapted with permission from the *Diabetes Dictionary* by the National Institute of Diabetes and Digestive and Kidney Diseases; MedlinePlus Medical Dictionary; and *BSCS Biology: An Ecological Approach*, 10th edition (BSCS, 2006).



Resource Directory

In an effort to provide teachers with additional high-quality resources of diabetes, we offer the following list of resources.

General Information on Diabetes

1. National Diabetes Information Clearinghouse (NDIC)

http://diabetes.niddk.nih.gov

The NDIC is a service of the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK). NDIC was created to increase knowledge and understanding about diabetes among patients, health professionals, and the general public. The NDIC Web site provides access to

- publications about diabetes, provided free of copyright, in varying reading levels;
- publications for health fairs and community events;
- the Combined Health Information Database;
- the diabetes subfile (which contains fact sheets, brochures, audiovisual materials, and reference materials for patients and health professionals); and
- an "A to Z list" of diabetes topics and titles.

2. U.S. Department of Health and Human Services—National Institutes of Health (NIH)

http://health.nih.gov

The National Institutes of Health (NIH), a part of the U.S. Department of Health and Human Services, is the primary Federal agency for conducting and supporting medical research. The NIH Web site provides access to

- research health topics A–Z,
- search health topics, and
- browse health categories.

3. U.S. Department of Health and Human Services—Indian Health Service

http://www.ihs.gov

The mission of the Indian Health Service (IHS) Division of Diabetes Treatment and Prevention is to develop, document, and sustain a public health effort to prevent and control diabetes in American Indian and Alaska Native peoples.

4. Food Nutrition Information Center

http://fnic.nal.usda.gov

The Food and Nutrition Information Center has been a leader in food and human nutrition information dissemination since 1971. It provides credible, accurate, and practical resources for nutrition and health professionals, educators, government personnel and consumers. The Web site provides access to

- resources for teachers,
- downloadable nutrition education,
- training materials, and
- high-resolution images for educational use.

5. National Diabetes Education Program

http://ndep.nih.gov/

This National Diabetes Education Program is a joint program of the CDC (Centers for

Disease Control and Prevention), NIH (National Institutes of Health), and 200-plus partners.

It provides

- resources for health professionals,
- resources for educators, and
- opportunities and information for business professionals.

6. Children with Diabetes

http://www.childrenwithdiabetes.com

Children with Diabetes is an online community for kids, families and adults with

diabetes, and provides

- the latest news and information for anyone with diabetes,
- an interactive database for children to use in e-mailing pen pals,
- forums,
- a parents' section with parent-specific information on diabetes,
- a home page for parents of kids with diabetes,
- an Ask the Diabetes Team feature, and
- a Diabetes Basics section (which offers basic medical information about diabetes, insulin, and research).

7. National Center for Chronic Disease Prevention and Health Promotion, Centers for Disease Control and Prevention (CDC)

http://www.cdc.gov/diabetes

- CDC's Diabetes Public Health Resource Web site contains information about
- the National Diabetes Education Program,
- national conferences on diabetes,
- diabetes data and trends,
- national studies, and
- Diabetes & Me (basic information on diabetes and its complications and on ways to be active and eat right).



8. American Diabetes Association

http://www.diabetes.org

The American Diabetes Association is the nation's leading nonprofit health organization providing diabetes research, information, and advocacy. The mission of the association is to prevent and cure diabetes and to improve the lives of all people affected by diabetes.

9. Nutrition.gov

http://www.nutrition.gov

Nutrition.gov provides easy, online access to government information on food and human nutrition for consumers. It is a service of the National Agricultural Library, USDA. The Web site provides access to

- food and nutrition information;
- physical activity requirements;
- food safety for consumers, educators, and health professionals;
- healthy choices to reduce obesity and other food related diseases; and
- specialized nutritional requirements of infants, children, teens, adult women, men, and seniors.

10. Ask the Dietitian—Joanne Larson, MS, RD, LD

http://www.dietitian.com

An interesting feature is the Healthy Body Calculator. Just type in your information, and the results are shown on the third page. A list of commonly asked questions and answers is provided.

11. Nutrition Quest

http://www.nutritionquest.com

This Web site offers an excellent tool for personal nutrition analysis, including

- fat content in your diet,
- fruit content in your diet,
- vegetable content of your diet , and
- fiber intake.

12. Joslin Diabetes Center

http://www.joslin.org

The mission of the Joslin Diabetes Center is to improve the lives of people with diabetes and its complications through innovative care, education, and research that will lead to the prevention and cure of the disease. The Web site provides current diabetes education via

- the latest news and press releases,
- an online diabetes library,
- online classes,

- discussion boards, and
- an interactive learning center (which provides a series of interactive courses on diabetes).

13. U.S. Department of Agriculture—MyPyramid.gov

http://www.mypyramid.gov/

The *MyPyramid Plan* offers you a personal eating plan with the foods and amounts that are right for you. Use the advice at *Inside the Pyramid* to help you

- make smart choices from every food group,
- find your balance between food and physical activity,
- get the most nutrition out of your calories, and
- stay within your daily calorie needs.

Teaching Tools

1. Discovery Kids

http://yucky.discovery.com

This interactive Web site promotes health education activities for kids, including

- games and quizzes,
- information on the endocrine system,
- information on the nervous system,
- information on the skeletal system, and
- information on the digestive system.

2. KidsHealth

http://kidshealth.org

Many topics are available, such as homework help, how the body works, information and news, and featured articles.

3. Mission Nutrition

http://www.missionnutrition.ca/missionnutrition/eng/

The Mission Nutrition Web site offers nutrition information for teachers, parents, or students. The links for educators are in the form of lesson plans and student activities.

4. Kateri Memorial Hospital Centre

http://www.ksdpp.org

This is the Web site of the Kahnawake Schools Diabetes Prevention Project. Their motto is "Healthy eating habits, daily physical activity, and positive attitude can prevent diabetes." This main Web page is oriented toward the educator and focuses on teaching elementary school children about the prevention of diabetes.



5. NIH Office of Science Education

http://science.education.nih.gov/

The Office of Science Education provides educational resources on this Web site. The NIH Curriculum Supplement Series is a package of interactive teaching units that combine cutting-edge science research discoveries from the National Institutes of Health, one of the world's foremost medical research centers, with state-of-the-art instructional materials. The educational resources are listed by topic, grade level, and resource formats.

Books

American Diabetes Association. (2005). *American Diabetes Association complete guide to diabetes.* Alexandria, VA: Author.

Kaufman, F. R. (2005). *Diabesity: The obesity-diabetes epidemic that threatens America and what we must do to stop it.* New York: Bantam Dell.

Enduring Understandings for the Grades 3–4 Units

By the end of the Grades 3-4 Units, students should be able to understand the following:

- We depend on nature for gifts.
- Balance is important for a healthy life.
- Our world, bodies, minds, and feelings work together to keep us healthy.
- We can listen to and learn from wise people.
- Diabetes is a disease that occurs when the body does not use sugar (glucose) in the right way.

Project Goal 1

To increase students' understanding of health and diabetes. To help American Indian and Alaska Native children learn how to maintain balance for themselves, their families, and their communities.

K-4 Specific Goals

- 1. Describe how meeting basic bodily needs creates a healthy balance in life.
- **2.** Explain that diabetes is when a person's blood sugar is too high, which leads to further imbalances in the body.
- 3. Investigate positive health behaviors that will reduce the risk of diabetes.
- **4.** Explore positive health behaviors that students and their families and their communities can adopt to contribute to a healthy balance.

Project Goal 2

To increase American Indian and Alaska Native students' understanding of and appreciation for the process of developing scientific and community knowledge with respect to health, diabetes, and maintaining balance.

K–4 Specific Goals

- **1.** Give examples of scientific and community knowledge that promote well-being and prevent diseases.
- **2.** Describe scientific concepts and traditional wisdom to maintain health and prevent disease.
- **3.** Demonstrate positive health behaviors from a scientific view and cultural perspective.



Project Goal 3

To improve attitudes toward and interest in entering science and health professions by developing a better understanding of how diabetes-related biomedical professionals work with communities and enhance health.

K-4 Specific Goals

- **1.** Identify community members who are health and science professionals as well as role models.
- 2. Describe the work of community members who are science and health professionals.
- **3.** Give examples of how the community or community members have been helped by the work of science and health professionals.

Health Is Life in Balance

Grades 3-4 UNIT 1: EXPLORING A HEALTHY BALANCE





Unit 1 Overview

Diabetes Education in Tribal Schools (DETS) Grades 3–4 Unit 1, *Exploring a Healthy Balance*, consists of six lessons that can be completed in approximately eight class sessions (see the timeline in *Teacher Strategies for Unit 1*). The lessons will help students understand that their overall health consists of many areas that work together. Students will explore the four areas of their lives that work together in harmony that can help promote good health. Students will understand the importance of people in their lives—people who are wise and people we listen to and learn from. Examples might include their parents, grandparents, aunts, or uncles who help them make good choices every day. Other examples might be people in their lives who give them information or ideas about ways to stay healthy and safe. These could include police officers, doctors, nurses, firefighters, teachers, and people from church or other prayer groups, such as spiritual advisers.

An important American Indian and Alaska Native value is one of having a relationship with everything around them, below them, and above them. American Indians and Alaska Natives feel a kinship, or connection, to the "winged" animals, the "two-legged," the "four-legged," and the "ones that swim." This value of "we are related" is what has helped American Indians and Alaska Natives survive, and live in harmony.

All living things seek balance. Balance helps maintain health. However, sometimes when things become unbalanced over time, illness or disease may result. Diabetes is a disease. Students will learn about an important sugar called glucose that the body makes from the food we eat, and about the body's need for energy. The body needs to use energy for activities such as playing, working, and learning. All people strive for balance in their lives to be healthy and happy. We strive to be in balance with our families, communities, and environment, too. Native American people are very wise about this. They have always known how important connectedness, balance, and gratitude are for living a happy, harmonious life.

Unit 1 Correlation with National Standards

National Science Education Standards

In today's classroom, it is important that curriculum materials help teachers address the standards that have been set for various subject areas. The content of this curriculum unit ties directly to the National Research Council's 1996 *National Science Education Standards* (*NSES*). The following chart indicates which standards are addressed by the different lessons within Unit 1.

Content Standards: Grades K-4

Content Standard A: As a result of activities in grades K–4, all students should develop	Correlation with the DETS 3–4 Unit 1
Abilities necessary to do scientific inquiry	
Employ simple equipment and tools to gather data and extend the senses.	Lessons 2, 3, 4
Content Standard B: As a result of the activities in grades K–4, all students should develop an understanding of	
Position and motion of objects	
The position of an object can be described by locating it relative to another object or background.	Lessons 2, 3
Content Standard C: As a result of activities in grades K–4, all students should develop understanding of	
The characteristics of organisms	
Organisms have basic needs. For example, animals need air, water, and food.	Lesson 1
Content Standard F: As a result of activities in grades K–4, all students should develop understanding of	
Personal health	
Individuals have some responsibility for their own health. Students should engage in personal care—dental hygiene, cleanliness, and exercise—that will maintain and improve health.	Lessons 1, 3, 4, 5, 6
Nutrition is essential to health. Students should understand how the body uses food and how various foods contribute to health. Recommendations for good nutrition include eating a variety of foods, eating less sugar, and eating less fat.	Lessons 1, 4, 5, 6

Source: Reprinted with permission from National Science Education Standards. © 1996 by the National Academy of Sciences, National Academies Press, Washington, D.C.



The National Health Education Standards

The content of this unit also meets several of the *National Health Education Standards*, as outlined in the chart at the right.

This unit also addresses standards in the areas of language arts, math, and social studies. See *Appendix A* for information about the correlation of the unit's lessons to these other standards.



Standard Number	National Health Education Standard	Correlation to the DETS 3–4 Unit 1
1	Students will comprehend concepts related to health promotion and disease prevention to enhance health.	
As a result of health instruction in grades 3 through 5, students will		
1.5.1	Describe the relationship between healthy behaviors and personal health.	Lessons 3, 4
1.5.2	Identify examples of emotional, intellectual, physical, and social health.	Lessons 1, 3
2	Students will analyze the influence of family, peers, culture, media, technology and other factors on health behaviors.	
As a result of	of health instruction in grades 3 through 5, students will	
2.5.2	Identify the influence of culture on health practices and behaviors.	Lessons 1, 3, 4, 5
3	Students will demonstrate the ability to access valid information and products and services to enhance health.	
As a result of health instruction in grades 3 through 5, students will		
3.5.2	Locate resources from home, school, and community that provide valid health information.	Lessons 4, 5
4	Students will demonstrate the ability to use interpersonal communication skills to enhance health and avoid or reduce health risks.	
As a result of health instruction in grades 3 through 5, students will		
4.5.1	Demonstrate effective verbal and nonverbal communication skills to enhance health.	Lesson 6
5	Students will demonstrate the ability to use decision-making skills to enhance health.	
As a result of health instruction in grades 3 through 5, students will		
5.5.3	List healthy options to health-related issues or problems.	Lesson 3
5.5.4	Predict the potential outcomes of each option when making a health-related decision.	Lesson 4
8	Students will demonstrate the ability to advocate for personal, family, and community health.	
As a result of health instruction in grades 3 through 5, students will		
8.5.1	Express opinions and give accurate information about health issues.	Lesson 6
8.5.2	Encourage others to make positive health choices.	Lesson 6

Source: Reprinted with permission, from the American Cancer Society. National health education standards: Achieving excellence (2nd ed.). Atlanta, GA: American Cancer Society. 2007, www.cancer.org/bookstore.



Teacher Strategies for Unit 1

Timeline for the Lessons

The timeline provides a guideline for completing the six lessons in Unit 1. The actual amount of class time needed for the unit will reflect the practice of individual teachers. Some classes will spend more time on activities and discussions than others. Depending on the amount of time available, you may need to complete lessons over multiple days. Lesson 1, *The Gifts of the Trees*: 45 minutes Lesson 2, *What Is Balance*?: 30 minutes

Lesson 3, A Healthy Balance: 45 minutes

Lesson 4, What Is Diabetes? How to Find Out More: 60 minutes

Part I, Through the Eyes of the Eagle: 20 minutes

Part II, Learning about Diabetes: 40 minutes

Lesson 5, Dancing a Message: 60 minutes

Part I, Messengers: 30 minutes

Part II, Let's Move-the Round Dance: 30 minutes

Lesson 6, My Health Message to Others: 45 minutes

The timeline assumes that you will teach the lessons on consecutive days. If several days separate the lessons, you may need additional time to review the previous lessons. This review will help students make stronger connections between the lessons.

Advance Preparation

4 Weeks Ahead

Order additional resources available to supplement the Eagle Books (optional).*

2 Weeks Ahead

Begin reviewing lessons.

1 Week Ahead

Make photocopies and transparencies.

Print out a color copy of the *Health Is Life in Balance* poster (on the Teacher Resource CD [TRCD]) and post it in the classroom.

*Coloring books that correlate with the Eagle Book series can supplement activities in this unit. These can be used as reinforcing activities or art projects for students. Additionally, *The Eagle Book Series: A Guide for Educators and Communities* (Centers for Disease Control and Prevention, n.d.) includes additional activities and information to go along with each Eagle Book. These resources and activities are available on the TRCD. You can also order printed versions of these resources or download them from the Centers for Disease Control and Prevention Web site: http://www.cdc.gov/diabetes/pubs/eagle.htm.

Gather the necessary materials. Send a copy of Copymaster 1.0, *Letter to Parents or Caregivers*, home with students. Copy on school letterhead if appropriate. Read the Eagle Books (Perez, n.d.).**

Teacher Materials for the Unit

chart paper markers for chart paper tape 1 ruler or pencil 1 large sheet of poster board or butcher paper Native American music on the TRCD Round Dance video on the TRCD (optional) CD player hand drum (optional) 1 color copy of the *Health Is Life in Balance* poster from the TRCD Eagle Book: *Through the Eyes of the Eagle* Eagle Book: *Knees Lifted High* (optional) 1 copy of Copymaster 1.1, *The Gifts of the Trees*

Student Materials for the Unit

For each student
scissors
crayons or markers
1 paper plate
1 glue stick
small amount of clay or play dough
1 piece of yarn or string
1 8¹/₂ x 11-inch blank sheet of paper
1 copy of Copymaster 1.0, *Letter to Parents or Caregivers*1 copy of Copymaster 1.2, *Health Is Life in Balance Circle*1 copy of Copymaster 3.1, *Modeling Balance T-Table*

**Read two of the books from the Eagle Book series, *Through the Eyes of the Eagle* and *Knees Lifted High*, before beginning the lessons. When introducing the books to the students, you may want to tell each story in your own words before reading it to them. This storytelling approach engages the students' attention. The story can be read in small parts to keep the students' interest, just as elders often tell stories in many small parts. The whole book can be read as another activity during reading time. During each lesson, you can open the book to a particular page to illustrate a point.



copy of Copymaster 5.1, Messenger Man
 copy of Copymaster 5.2, Messenger Woman
 copy of Copymaster 5.3, School-to-Home Activity: Let's Move—The Round Dance
 copy of Copymaster 6.1, A Good Health Message

For each team of 2–3 students

2–3 glue sticks

4 pennies or other objects that will not roll

small amount of clay or play dough

1 clean bowl or 1 small cup of sugar

2–3 hand lenses

2–3 clean craft sticks or plastic spoons

1 copy of Copymaster 2.1, Balance Pictures

Vocabulary List

balance: For a physical state, balance is shown when an object rests without tipping on a smaller, narrower object. In the context of health issues, balance is a state of harmony where nothing is out of proportion or overemphasized at the expense of the rest.

diabetes: Diabetes is a disease that happens when the body does not use sugar (glucose) in the right way.

disease: A disease is a problem in the body that does not let it work the right way. **glucose:** Glucose is a type of sugar in the blood and is the main source of energy for the body.

healthy: Healthy means the condition of being sound in body, mind, and spirit; not sick. **model:** A model represents or stands for something else.

Monitoring Students' Progress

Assessing what students have learned during an activity, lesson, or unit is an important part of your role as a teacher. Because assessment can play a different role at different times, Unit 1 has a variety of assessment strategies built in to the procedures.

The Engage lessons often include a mechanism for learning more about the preconceptions that students have before new content material is presented. From research on learning, we know that it is important for students to recall and think about their current knowledge and ideas. Some of this information is likely to be accurate and correct, but often this opportunity enables students to consider what they know, what questions they have, and even what discrepancies they have in their knowledge. Only after considering their prior knowledge will they be ready to add new information or revise incorrect ideas. Assessment is also important as students progress through the lessons in the unit. In this unit, an icon in the margin denotes an opportunity for assessment. The icon indicates stages at which you can assess students' understanding of the enduring understandings or major concepts the lesson is designed to convey. Specific strategies for evaluating students' understanding are provided with the icon. Some of the strategies are informal and quick, while others may be more in depth. On the basis of students' understanding at these points, you can modify your teaching practices accordingly.

The Evaluate lesson in the unit provides an opportunity for students to synthesize what they have learned during the previous lessons. By completing the Evaluate lesson, students demonstrate what they have learned and apply their understanding to new situations.

Finally, some teachers may wish to use an end-of-the-unit quiz to assess students' understanding of the ideas and concepts. The accompanying Teacher Resource CD (TRCD) includes a short test bank of questions that can be used for this purpose. The questions are in a variety of formats—multiple choice, true-false, short answer, and problem solving. As you design your end-of-unit quiz, select the questions from the test bank that represent the concepts you focused on and that align with the way you taught the unit.





Health Is Life in Balance

Unit 1 Exploring a Healthy Balance Student Lessons









At a Glance

Overview

In Lesson 1, *The Gifts of the Trees*, students listen to the story *The Gifts of the Trees* and learn about gifts they receive from trees such as food, shelter, baskets, and canoes. Students then think of other gifts from nature and learn how our world, bodies, feelings, and minds work together to keep us healthy. Students use the handout called *Health Is Life in Balance Circle* to explore and list ways that ideas, resources, feelings, and people can help keep them healthy. You will learn what your students' preconceptions are about health and balance through questioning during the lesson.

Enduring Understandings

- We receive many gifts from our world.
- Our world, bodies, minds and feelings work together to keep us healthy.

Teacher Background

Beliefs: Harmony and Balance

Though belief systems vary with every tribe, striving for harmony and balance in life seems central to many American Indians and Alaska Natives. Harmony and balance play a vital role in the American Indian belief of interrelatedness and connectedness with all natural things. The concept not only explains the interdependence of humans with other animates and inanimates in the world, but it also recognizes the need for individual wellness—of the interdependence of physical, emotional, psychological, and spiritual well-being.

It is common for American Indians and Alaska Natives to represent this interrelatedness and connectedness by a circle. Individuals are considered whole when their physical, mental, spiritual, and emotional selves exist in harmony. If there is something negative going on with one part of the self, it affects the other parts and causes an imbalance in the whole self.

Black Elk Speaks: Being the Life Story of a Holy Man of the Oglala Sioux

Black Elk Speaks is the story of the Lakota healer Nicholas Black Elk (1863– 1950) and his people during the latter part of the nineteenth century. The following quotes are from the book, which was first published in 1932.

"Finding our face, finding our heart, finding our foundation ... "

"Every thing an Indian does is in a circle, and that is because the power of the World always works in circles, and everything tries to be round." Lesson 1: The Gifts of the Trees Engage "This knowledge came to us from the outer world without religion. Everything the power of the World does is done in a circle. The sky is round, and I have heard that the earth is round like a ball, and so are the stars. The wind, in its greatest power, whirls. Birds make their nests in circles, for theirs is the same religion as ours. The sun comes forth and goes down again in a circle. The moon does the same and both are round. Even the seasons form a great circle from childhood to childhood, and so it is in everything where power moves. Our teepees were round like the nests of birds, and these were always set in a circle, the nation's hoop, a nest of many nests, where the Great Spirit meant for us to hatch our children." (Neihardt, 1988)

The traditional story, *The Gifts of the Trees*, illustrates the many things we depend on from nature. Students will give you their ideas about balance in this lesson. There is a formal definition in the vocabulary list but it is not necessary or desired for students to learn this definition.

Outcomes and Indicators of Success

By the end of this lesson, students should be able to

1. acknowledge that we receive many gifts from trees and our world.

They will demonstrate their understanding by

- listening to a traditional story The Gifts of the Trees,
- recalling the gifts that trees provided, and
- naming other gifts provided by nature.

2. think about and write their ideas about how their world, bodies, minds, and feelings work together to help them stay healthy.

They will demonstrate their ability by writing and illustrating their ideas on the *Health Is Life in Balance Circle* handout.

3. reveal their ideas about health and balance.

They will reveal their ideas by

- lillustrating, demonstrating, or telling the teacher what they know about balance and
- discussing their ideas about the word "health."

In Advance

Teacher Materials

1 color copy of *Health Is Life in Balance* poster from the TRCD chart paper

markers for chart paper 1 copy of Copymaster 1.1, *The Gifts of the Trees*

Student Materials

For each student scissors crayons or markers 1 paper plate 1 glue stick 1 copy of Copymaster 1.0, *Letter to Parents or Caregivers* 1 copy of Copymaster 1.2, *Health Is Life in Balance Circle*

Preparation

Approximately one week before starting Unit 1, send a copy of Copymaster 1.0, *Letter to Parents or Caregivers*, home with each student to inform the families that students will be learning about diabetes and maintaining a healthy balance. Prepare copies on school letterhead if appropriate.

Hang the Health Is Life in Balance poster in your classroom before beginning the unit.

Process and Procedure

- 1. Read Copymaster 1.1, *The Gifts of the Trees*, to the class. Discuss with students what the trees provided. List all responses on the board.
- 2. Guide students to think about other gifts from nature or our environment that we depend on, things like the earth for food, trees for homes or shelters, land for animals to live on, the sun for energy, the sky, and sources of water. Ask students to think about how important relationships are with our families, communities, and the environment.
- 3. Distribute Copymaster 1.2, *Health Is Life in Balance Circle*, to each student. Ask students to read the title of the handout. Review the meaning of the words "health" and "healthy" with students. Explain to students that like *The Gifts of the Trees* story, we have gifts from our world that keep us healthy.

Our feelings, minds, and bodies are also gifts that we can use to stay healthy. Keep the list of students' ideas posted where students can see it throughout the unit.

4. Ask students to read the four sections on the handout. Ask them to list a few of the things under the heading "my world" that they have talked about that are important to our survival. Ask, "What gifts does the earth give us?" Have students list or illustrate their responses in the "my world" section on the handout.

Examples include trees for shelter, land to grow fruits and vegetables, and animals for food. Additionally, they should recall things they mentioned in Step 1.

5. Ask students to think about clues that let them know their bodies need something. Ask them: "What are some clues that your body gives you? What is your body able to do?" Have students list or illustrate their responses in the "my body" section on the handout.

Examples include that our bodies are able to exercise, eat, drink, play, see, smell, taste, and so on. Our bodies feel hungry when we need to eat, thirsty when we need water, sleepy when we need rest.

6. Ask students to list some important things our minds let us do to help keep us healthy. Have students list or illustrate their responses under the "my mind" section on the handout.

Guide students to think about how our minds help us make healthful choices in our everyday lives. For example, our brains or our minds help us learn and remember things.

7. Ask students to name some feeling they can think of or how they feel when they are healthy, not sick, and are able to do many things. Ask them to write or illustrate their ideas under "my feelings" on the handout.

Examples include that they feel rested, happy, and have a lot of energy.

8. Ask them to read the title of the handout again, *Health Is Life in Balance Circle*. Ask the students to review what the word "health" or "healthy" means. Ask them if there is another word in the title that is new to them.

Students will likely say "balance." If they do not, then give them time to choose the word balance.

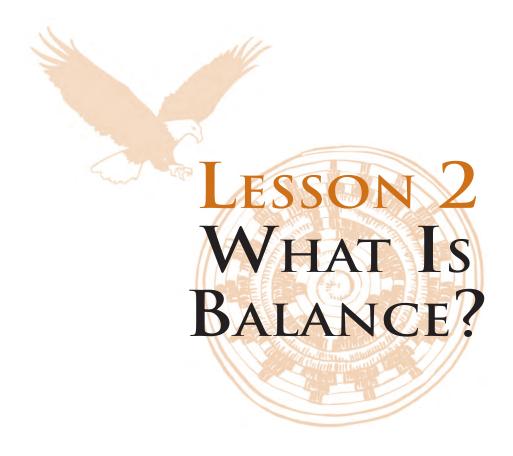
9. Have students illustrate, demonstrate, or tell you what they think the word balance means. Write their ideas on the board or chart paper.

This will give you an idea how much your students know about balance. Balance is a central theme of the next few activities. It is not important that students know a formal definition for the word; they will develop their own operational definition for balance. It is important for you to know where your students are in their understanding of the concept of balance. This will inform your teaching during the next few activities.

Students will add to their ideas in Lesson 2, *What Is Balance*? Be sure to save the list for use at that time.

10. Ask students to cut out the circle and glue it to the center of a paper plate.Explain to students that they will use these plates again during the next lesson.Collect students' plates for use in Lesson 2.

Health Is Life in Balance





At a Glance

Overview

In Lesson 2, *What Is Balance*?, students explore the concept of balance by observing you balancing an object, balancing objects on their own, and describing how certain activities require balance. They learn about physical balance in this lesson, and in the next lesson they connect their understanding to balance related to good health.

Enduring Understandings

Objects can be balanced. When the system changes, a balanced object may become unbalanced or an unbalanced object may become balanced.

Teacher Background

For a physical state, balance is shown when an object rests, without tipping, on a smaller, narrower object. Students will start to develop their own operational definition of balance in this lesson. They need not memorize this formal definition to be successful.

Outcomes and Indicators of Success

By the end of this lesson, students should be able to explore the concept of balance. They will explore the concept of balance by

- observing their teacher balancing certain objects,
- balancing a paper plate on a glue stick,
- describing how certain activities require balance,
- doing physical activities that give them an experience of balance,
- revising their initial ideas about balance, and
- explaining how they balanced an object.

In Advance

Teacher Materials

1 ruler or pencil

Student Materials

For each student

1 paper plate with *Health Is Life in Balance Circle* glued in the center, from Lesson 1

1 glue stick

small amount of clay or play dough

For each team of 2-3 students

1 copy of Copymaster 2.1, Balance Pictures

Lesson 2: What Is Balance? Explore



Process and Procedure

1. Begin Lesson 2 by balancing a pencil or a ruler on your finger. Walk around the room with the object balanced on your finger. Ask the students what you are doing.

Allow several students to respond. A student will likely say you are *balancing* the object on your finger. If you do not get this response, ask leading questions such as: "Do you know a word that describes what I am doing with the pencil [or other object]?" If you still do not get them to think of the word balance, continue by saying, "The word I am thinking of begins with a b."

- **2.** Ask students if they think they can balance something on their fingers. Allow them to try different objects and encourage everyone to try.
- **3.** If time and space allow, have the students try standing on one foot, both the left and the right, balancing in a V-sit position, and walking heel to toe on a line on the floor.

Students could also do balance activities during physical education or gym time. Discuss the possibilities with the physical education teacher, if appropriate. Other balance activities include using a balance beam; doing gymnastic balances (headstands, etc.) on mats; or using a teeterboard, balls, and other equipment.

4. Divide the class into teams of two or three students. Distribute Copymaster 2.1, *Balance Pictures*, to each team. Have them study each picture and discuss with their teammates how each picture shows balance.

As students work, circulate among the teams to monitor the teams' progress. Encourage all members of the team to share their ideas by taking turns describing each picture. After all teams have completed their discussions, have each team share one idea with the class.

5. Point out and review the list of ideas about balance that students developed during Lesson 1, *The Gifts of the Trees*, Step 9. Ask students if they want to change or add anything to their ideas.

Answers will vary. Accept all responses that indicate an understanding of balance. To reinforce their ideas of balance, ask students to give an example of something that is balanced or activities that require balance that are different from what they have seen in this activity.

6. Give each student his or her paper plate with the *Health Is Life in Balance Circle* glued to the center (from Lesson 1). Ask students if they think they can balance the paper plate on a glue stick.

Lead them to stand the glue stick upright and balance the paper plate on the glue stick (figure 1.1). If students have difficulty, use the clay or play dough to secure the glue

stick. If students still have trouble, help teams get their plates balanced or suggest that they balance them on the ball of clay.

Students can do this individually or as a team using only one student's paper plate.

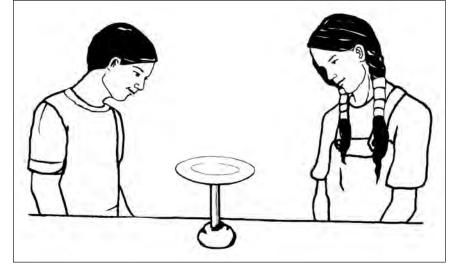
 To conclude the lesson, ask teams to describe to the class how they got the plate to balance.

If they had difficulty, have them describe how they overcame that difficulty.

Point out to students that for the plate to balance, the same amount of plate must be on each side of the balancing point (the glue stick).

Figure 1.1:

Balancing a plate. Students should balance their plates similarly to this.









At a Glance

Overview

Students connect what they learned about balance in Lesson 2, *What Is Balance?*, with the idea of balance as it relates to health in Lesson 3, *A Healthy Balance*. Students will see how an illness can make a life "out of balance" for a time. They consider conditions where more than one area of their lives may become out of balance. Students strengthen their critical-thinking skills as they make an analogy map on a T-table in which they compare their paper plate models and their lives.

Enduring Understandings

- Our world, bodies, minds, and feelings all work in balance to keep us healthy.
- Models help us understand.
- Illness can cause our bodies to be out of balance for a time.

Teacher Background

In the context of health issues, balance is a state of harmony where nothing is out of proportion or overemphasized at the expense of the rest. Students will begin to understand this concept as they work through the activities in this lesson.

Outcomes and Indicators of Success

By the end of this lesson, students should be able to

- 1. understand how balance relates to health.
 - They will demonstrate their understanding by
 - recalling the four areas—our world, bodies, minds, and feelings—from the Health Is Life in Balance Circle paper plate model,
 - physically balancing the paper plate model on a glue stick, and
 - simulating an illness by placing a penny on one section of the circle to cause it to unbalance, or topple.

2. analyze their paper plate model as a representation of their lives.

They will demonstrate their ability by constructing an analogy map on a T-table to compare the physical balancing of a plate with their healthy lives.

In Advance

Teacher Materials

chart paper (optional) markers for chart paper (optional) Lesson 3: A Healthy Balance Explain



Student Materials

For each student

1 copy of Copymaster 3.1, Modeling Balance T-Table

For each team of 2–3 students

students' paper plates with *Health Is Life in Balance Circle* glued in the center, from Lesson 1 2–3 glue sticks 4 pennies or other objects that will not roll small amount of clay or play dough

Process and Procedure

 Group students in teams of two or three students. Give each team their paper plates, glue sticks, and clay. Ask them to balance their plates on the glue stick. Have a student summarize what they learned about balance from Lesson 2.

Help students remember that the plate balances when the same amount of the plate is on each side of the glue stick.

- 2. Call on students to read the title of a section of the plate and give one of the examples that they wrote under that heading. Continue until you have revisited each section of the plate.
- **3.** Tell students that the balancing plate is like a healthy life. Our world, bodies, minds, and feelings all work together to make us healthy. When all four of these areas are balanced, we can be healthy.
- 4. Tell students they will now make a change to their plates to see what happens if one part of a person's life changes. Give each team of students four pennies (or other objects) and ask them to put the pennies on the desk in front of them.
- **5.** Ask one student in each team to drop one penny in the "my body" section of the balancing plate. After doing so, ask students to describe what happened.

It may be helpful to explain that students should only try this once (they could do it again later, but it is helpful to get their first result) and not touch the plate or penny after they place (or drop) the penny. Students' approaches to using the penny will vary. Some will place the penny carefully so that it doesn't change much about the balance. Others will drop the penny so that the plate falls off completely. Other students will place or drop the penny so that the plate looks very out of balance but does not fall off the glue stick. All of these approaches can reveal things about balance. Ask students to look around the room at the other teams' plates. The different results will be interesting to students and can be a good point for discussion. Note to Teacher: The dropping of the pennies can move fairly quickly. Students should get the point that adding an illness or a problem to "my body" (or any of the other sections) disrupts balance in either a minor way or a more substantial way. To keep it moving quickly, make sure students understand that they should simply drop the penny once (the goal is not to plan the result and place the penny to get that result) and not touch it again until you tell them to.

6. Ask teams to balance their plates again and then use two pennies in the "my body" section. Ask students to observe what happened to their team's plates and to those of other teams.

With two pennies, plates are likely to be farther out of balance and more plates will probably fall off the glue sticks altogether.

7. Explain that the penny represents an illness or something that causes the body not to work normally. Ask, "If the balancing plate shows a life that is healthy and balanced, what does a plate that is out of balance represent?"

Help students recognize that a problem or an illness that affects people's bodies makes their entire lives out of balance. The difference in how far out of balance life becomes is modeled by the different effects of the pennies on the plates. Some problems with the body's function don't disrupt a healthy balance very much. For example, a cold is a problem that affects us, but usually only a little bit for a short time. This is somewhat like a penny that doesn't disrupt the balance of the plate very much. Other problems affect people's lives to a greater degree. For example, something like strep throat or pneumonia causes more problems in people's functioning—they stay home from school, can't concentrate well because they feel really bad, are sometimes sad because they can't do what they normally do, and other things. This situation could be like the penny that causes the plate to become very unbalanced or even fall off the stick. If a person has more than one part of the body that isn't functioning normally (two pennies dropped on the plate), he or she is more likely to be even farther out of balance.

8. Ask students to predict what would happen to the balance if the penny were dropped on a different section of the plate.

Students should recognize that dropping a penny on any of the sections of the plate can cause an imbalance. If time allows, give students time to try it.

9. Ask students to remove the penny from the plate and rebalance it again. This time, ask students what they think would happen if more than one part of a person's life changed at the same time. Ask students what they would do to the model to show two parts of a person's life changing.



Students should see that this would involve adding one penny to each of two sections of the plate. This again would result in the plate being out of balance, unless the students carefully place two pennies directly across from each other on opposite sides of the glue stick. This is not likely and it would be difficult to get the plate to balance.

10. Ask follow-up questions such as: "When is a person's life out of balance?""Could it be put back into balance somehow? As good as before?"

If students understand that the balancing plate represents a person's life that is healthy, they should say that the person's life can be out of balance during certain events or during an illness or disease. Ideas for how a person could put his or her life back into balance include doing things that get rid of the illness or problem that affects the four parts of the person's life. And during this time, we look to other people who we listen to and learn from for ideas, information, and suggestions of how we can work toward that balance.

Note to Teacher: Make sure that students understand that we all get "out of balance" at different times during our lives and it is possible to cope with or overcome these challenges. Students often feel that it is somehow "their fault" when there is a family illness or challenge. Emphasize with your class that they are not to blame for these things, but that they have choices to make and can learn to make wise choices.

Consider emphasizing that when we face a challenge (sometimes a great sadness) or an illness, life can seem out of balance for a time. To get back into balance, we can get support from other people. We can listen to wise people, we can adapt, and we can learn how to cope with illness. We can still strive for balance.

11. Discuss the activity with the class and how the activity was a model for a healthy person. If students do not know what a model is, explain that a model represents or stands for something else. Give them a few examples of models. Ask them to give you more examples and explain their ideas.

A toy car is a model of a real automobile. The toy looks like a small version of a car. A doll can be a model of a real baby. It has a body, face, and limbs that look like those of a real baby. The model doesn't necessarily have all the features of the real item, but models can represent the real thing and we can learn some information from them. A scientific model that students may be familiar with is one of the solar system constructed using balls. Each ball represents one of the planets and the arrangement of the balls illustrates the positions of the planets in relation to each other.



12. Draw a T-table on the board or chart paper with the headings "paper plate model" and "our lives." Give each student a copy of Copymaster 3.1, *Modeling*

Balance T-Table. Ask questions such as the following to guide the discussion. Write students' responses under the appropriate heading in the T-table (see figure 1.2).

- "What four sections of the circle have to be on the plate for it to balance?""What four things must work together for us to stay healthy?"
- "What happened to the plate when a penny was added to one section of the plate?" "What happens to a person's life if something changes in one part of the person's life?" "What did the penny represent or stand for?"

Students will express their ideas differently, but try to help them see that changing a certain part of a person's life will change the balance. Changing more than one thing can make a person's life go even farther out of balance. All four parts are important. If students have difficulty with this idea, ask them to predict what would happen if you cut out one section of the plate without changing anything else about how the plate is balanced. If a person's life is not balanced because something has happened, what are some ways we can help get that person's life in balance? Changing what is causing the imbalance may help get a person's life back in balance.

Paper Plate Model	Our Lives
4 sections of the <i>Health Is Life in</i> Balance Circle	My world, my body, my mind, and my feelings
Balance	Healthy
A penny	An illness
The plate tips over—it is out of balance.	A person may become ill if some part of his or her life is out of balance.

Figure 1.2: Sample answers to Copymaster 3.1, Modeling Balance T-Table.

Save the completed T-table for use during Lesson 4, *What Is Diabetes? How to Find Out More*.

13. Conclude this activity by writing this phrase on the board or chart paper: "My life is balanced. I can be ______." Ask a student or students to read the phrase aloud. Ask them to think of a word that they have been learning about that would complete the last sentence.

If students don't suggest it, ask them if "healthy" would be a good word to use. Ask them to explain what it means to have your life in balance. If they do not mention it, explain that a healthy person wants to have all four parts of his or her life stay balanced and work right, or have all the parts work together, to be in balance and be healthy. Ask the students to name the four parts of their lives that they have been learning about. Complete the class T-table from Step 12 with "balance" under the heading "paper plate model" and "healthy" under the heading "our lives."





LESSON 4 WHAT IS DIABETES? How to Find Out More



At a Glance

Overview

Lesson 4, *What Is Diabetes? How to Find Out More*, is divided into two parts. In Part I, you will read the story *Through the Eyes of the Eagle* to your students. You will use this story as an introduction to diabetes education for your students. In Part II, students learn that glucose is the name of a specific type of sugar. They also learn that the body needs glucose to produce the energy it needs to grow and be active. Students consider the disease diabetes, and they think of people they know who have diabetes. Finally, they consider ways to become more active to keep healthy.

Enduring Understandings

- A proper diet and being more active can help us be healthy and strong.
- Disease occurs when the body has a problem that does not let the body work in the right way.
- Diabetes is a disease that occurs when the body does not use sugar (glucose) in the right way.

Teacher Background

Refer to the Overview of Diabetes section in Introductory Information.

Outcomes and Indicators of Success

By the end of this lesson, students should be able to

1. improve their listening and comprehension skills.

They will improve their skills by

- listening to the story Through the Eyes of the Eagle,
- retelling parts of the story,
- recalling what the eagle said about staying healthy, and
- connecting what they can do with staying healthy.
- **2.** begin to understand about disease and diabetes.

They will demonstrate their understanding by

- connecting a body that is out of balance with disease,
- recalling people they know with disease, and
- listing activities they can do to stay healthy.
- 3. refine their observation skills.

They will demonstrate their ability by making observations of a substance and correctly identifying the substance as sugar.

Lesson 4: What Is Diabetes? How to Find Out More Explain



4. learn that glucose is another form of sugar and is used by the body for energy.

They will demonstrate their learning by

- recalling examples of living things and that most living things contain a form of sugar and
- using analogies to reinforce their learning that the body needs glucose for energy.

In Advance

Teacher Materials

chart paper (optional) markers for chart paper (optional) tape (optional) Eagle Book: *Through the Eyes of the Eagle* class T-table from Lesson 3, Step 12

Student Materials

For each team of 2–3 students

1 clean bowl or 1 small cup of sugar

2–3 hand lenses

2-3 clean craft sticks or plastic spoons

Process and Procedure

Part I: Through the Eyes of the Eagle

- Begin by having students recall what they learned in Lesson 3 about balance and health. Allow several students to share their ideas. Call attention to the class T-table comparing the paper plate model to their lives. Ask them what they learned about what can happen when their lives are out of balance. Students should respond that they might become ill or get an illness.
- Tell students that "disease" is another word for "illness." Write the word disease on the board or chart paper with the following definition: "Disease means there is a problem in the body that does not let it work the right way."
- **3.** Ask students if they have ever heard the word disease or know examples of disease.

Students may respond with examples such as cancer, tonsillitis, a cold, the flu, pneumonia, or bronchitis.

4. Tell students that you have a story that teaches us about diabetes and things we can do to stay healthy. Read the book *Through the Eyes of the Eagle*.

Stop periodically throughout the story and have a student or several students recap what has happened in the story. This will keep young students more focused on the story.

5. At the conclusion of the story, write this question on the board or on chart paper: "What can we do to be healthy and strong?" Ask the students what two things they learned from the story that will help keep them healthy and strong. Students should remember that the eagle told Rain That Dances that they should eat healthfully and they should become more active. Write these two statements on the board or chart paper. Leave this up for the remainder of these lessons.

Part II: Learning about Diabetes

 Begin by having students remember what they learned in Part I. Point to the question and answers written on the board or chart paper: "What can we do to be healthy and strong?"

The two things that students learned in the Part I were eating healthfully and becoming more active.

- 2. Ask students to recall what they learned about disease and diabetes from the story *Through the Eyes of the Eagle*. Call on students to give their definitions and what they learned.
- **3.** Tell students that diabetes is a disease in which the body cannot use sugar in the right way. Write this definition on the board or on chart paper. Tell students that in order for scientists to learn more about things, they think about what they already know and then investigate the topic to learn more.
- 4. Group students into teams of two or three and give each team a bowl or cup with a small amount of sugar. Do not tell them what it is. Tell students that you want them to make observations and use their observations to figure out what the substance is.

Students can observe the substance with hand lenses. They can also feel the grains with their fingers. Give each student a clean craft stick or plastic spoon. Have students get a *small* amount (a few grains) of the substance and taste it. They should be able to guess the identity of the substance.

Note to Teacher: Make sure all utensils, containers, and sugar are clean and fresh. Caution students not to taste a big portion of the substance.

 Ask students to think about what sugar is, what it looks like, and where it might be found. Give teams time to tell what they know. Record their ideas on the board or chart paper.





6. Tell students sugar is found in most living things. Ask students to give examples of living things.

The main organisms mentioned should include people, plants, and animals.

7. Tell students that sugar comes in many forms, has many jobs, and has different names. Explain that today they will be talking about a sugar called *glucose*. Ask students to say the word "glucose" aloud; write it on the board with the definition:

"Glucose is the name for a particular kind of sugar."

Have students read the definition aloud.

8. Inform students that glucose in the body is used for energy. Ask for analogies and give examples with the following statements: "A car needs ______as energy to move, a television (or computer) needs ______to be turned on." Continue to get students to think of things that depend on other sources for energy.

Appropriate words to fill in the blanks would be "gas" and "electricity."

- **9.** Ask students if our bodies need food to grow. Explain that the food we eat is broken down into smaller and smaller pieces. One of the things that food is broken down into is glucose. Our bodies use glucose as energy for the body to be active and grow. Write the following statements on the board. Have students read them aloud and fill in the blank.
 - "We eat food. Some of the food turns into_____." Answer: Glucose.
 - "Our bodies use this sugar for energy."



 Remind students of the activity where they balanced a plate on a glue stick. Ask students what they learned from that activity.

Students will likely say they learned about balance.

Probe their understanding by asking what the balancing plate represents. Call their attention to the T-table you made in Lesson 3 comparing the paper plate model with our lives. Ask them what happens when the body is out of balance.

11. Ask students to think whether they know someone—a relative or friend whose body wasn't staying in balance. Who would they go to for more information or for help?

Students should say that they would see a doctor if they were sick. Or they may say they would go first to a parent or older family member, or to a teacher or school nurse. Encourage all appropriate answers.

12. Ask, "If the doctor told you one of the ways to keep your body in balance was to be more active, could you think of ways to become more active every day?"

13. Conclude the lesson by making a class list of ways to be more active. Tell students that physical activity helps the body use glucose.



Guide students to think of activities for which the body would need more energy, like playing a game of tag or hiking or riding a bike, and less energy, like sleeping or sitting.







At a Glance

Overview

Lesson 5, *Dancing a Message*, has two parts. In Part I, students examine the *Health Is Life in Balance* poster and think of people they listen to and learn from. Students learn the importance of seeking information from these "messengers," and they list the many things they can learn from these wise people. Students draw and color their messengers and wear them around their necks. Students "become" their messengers as they dance the Round Dance in Part II. During the dance, students have the opportunity to share about their messengers and list the many things we can learn from these messengers. Finally, students make a class *Health Is Life in Balance* poster using their personal messengers.

Enduring Understandings

- We can listen to and learn from many wise people in our community.
- Traditional dances can make us more active.

Teacher Background

American Indian and Alaska Native cultures are filled with tradition. These cultures have sustained their traditions mainly through practicing them and through oral history or storytelling. Oral history is a method significant to Native cultures, where wisdom is passed down through tribal elders and leaders, and through members of the extended family such as grandparents and great-grandparents. The practice of storytelling developed over time to teach life lessons and traditional Native values and to preserve tribal history. Storytelling is the traditional role of elders and orators, who are referred to as messengers in this unit. These messengers share their wisdom with younger generations so that tribal culture, tradition, and history may be learned, preserved, and passed on to future generations.

The Round Dance is a friendship dance that goes by many names for different tribes: *Kahomni*, 2-Step, Owl Dance, Friendship Dance, and Rabbit Dance. It is a social dance that is often a part of American Indian gatherings, including community social dances, ceremonies, and powwows.

Outcomes and Indicators of Success

By the end of this lesson, students should be able to

1. consider different people in their lives who they can go to for more information.

- They will demonstrate their ability by
- listing different people who they listen to and learn from,
- thinking of what they can learn from wise people in their lives,

Lesson 5: Dancing a Message Elaborate



- naming and coloring a picture of one or two messengers who give them important information about good health and who help them learn, and
- constructing a class *Health Is Life in Balance* poster with their messengers.
- 2. assume the role of their messengers in a physical activity.

They will demonstrate their ability by

- role-playing their messengers while dancing the Round Dance and
- naming the things they can learn from different messengers as they dance the Round Dance.

3. participate in a physical activity related to traditional American Indian and Alaska Native culture.

They will demonstrate their ability by

- dancing the Round Dance with their class and
- considering the significance of the Round Dance.

In Advance

Teacher Materials

chart paper (optional) markers for chart paper (optional) tape 1 large sheet of poster board or butcher paper 1 color copy of *Health Is Life in Balance* poster from the TRCD Native American music on the TRCD Round Dance video on the TRCD (optional) CD player hand drum (optional) Eagle Book: *Knees Lifted High* (optional)

Student Materials

For each student scissors crayons or markers 1 piece of yarn or string 1 copy of Copymaster 5.1, *Messenger Man* 1 copy of Copymaster 5.2, *Messenger Woman* 1 copy of Copymaster 5.3, *School-to-Home Activity: Let's Move—The Round Dance*

Process and Procedure

Part I: Messengers

Students learn the meaning of the messengers in the circle on the *Health Is Life in Balance* poster. Tell students that the people dressed as dancers are messengers. They are like storytellers and carry with them *knowledge* about how to stay healthy and strong. Help students make connections throughout the lesson about people they know who are health professionals or other people who help them learn.

1. Ask students about someone who tells them stories.

Students will be able to explain that there are many people in their lives who they can listen to and learn from.

2. Create a list on the board or chart paper of people that students can think of who they might go to for more information about their health, their home-work, their friendships, or any problems.

Some responses will be parents, grandparents, other family members, doctors, nurses, or teachers.

- Tell students it is important to know who we can go to if we want to know about something and that these people will always be important to us in gaining knowledge.
- 4. Distribute Copymaster 5.1, *Messenger Man*, and Copymaster 5.2, *Messenger Woman*, to students. Have them think of someone they consider as an important messenger of good health, someone who gives them good ideas or helps them learn. Students may use one or both handouts. Instruct students to color and name the person on the handout.

The person (or people) that students depict should be someone they know who they think has knowledge and wisdom.

- 5. After students have finished naming and coloring their messengers, ask the students questions such as, "How does the messenger teach? Does the messenger tell stories? Does the messenger demonstrate by example? What important things do you learn from your messenger?"
- 6. Ask students to cut out their messengers. Attach yarn or string to the messengers and have the students hang their messengers around their necks. Tell them they are going to play the role of their messengers in Part II.

Part II: Let's Move—the Round Dance

This follow-up activity involves practicing a Native American dance known as the Round Dance, or Friendship Dance, as the students become their messengers. This will





reinforce how physical activity is important for our health, how we need energy to perform any type of activity, and how all people we listen to and learn from work together to share their wisdom.

Listen to the music on the TRCD and select a passage of music to use for dancing the Round Dance. If you are not familiar with the Round Dance, view the video on the TRCD to learn more about the dance.

If you use the option of a hand drum for the music, it will be easier if you have another adult play the drum so that you can help students with the dance. Arrange for the person to be at your classroom at the appropriate time.

Note to Teacher: Tell students that the people in the Health Is Life in Balance poster are dressed in their dance regalia and are doing a Native American dance sometimes known as the Friendship Dance. The Round Dance is a way to show how life works in a circle, and holding hands shows how the circle is connected.

- Ask students if they have ever participated in dances. Explain to students that dances are important activities in the lives of Native Americans. One dance that is part of many tribes is the Round Dance. The Round Dance is one example of a physical activity that is special to many Native American tribes.
- 2. Inform students that they will be participating in a Round Dance as a way to help them remember what the circle means and how this shows a relationship of everything around us.
- 3. Place a mark on the floor that the students will pass over as they dance the Round Dance. Tell the students that when the music stops they are to stop dancing and remain still.

As they are moving in a circle, you will stop the music periodically and the student on the marked spot will tell the class what messenger he or she is.

4. Start playing a Native American song or slowly beat a drum. While students are dancing, inform (or remind) them that this is called the Round Dance.

Native Americans have used this dance form for many years to celebrate friendship and unity among all people. Students move in a clockwise direction stepping with the left foot, one step at a time.



5. After dancing once or twice around the circle, stop the music. The student standing on the marked spot is "it." The rest of the class says in unison, "Who are you?" The student who is it tells the class who she or he is. Remind the student that he or she has become the messenger. Then ask the rest of the class what they can learn from this messenger.

Have two or three students respond.

- 6. Begin the music again and repeat Step 5 as many times as you like.
- 7. While the students are still dancing, discuss the idea of balance and harmony. This means that all the dancers have to move together at the same speed to reinforce the idea of balance. Have students start the dance again, and then have them act out, with some taking bigger steps, some smaller steps, some faster steps, and some stopping. Discuss how these changes make the circle out of balance, not in harmony. All the parts must work together to keep the circle moving smoothly.

Reinforce the idea that all of these messengers work together to share their knowledge.

8. After the students have finished with the dance, guide them in a discussion about the dance.

Reinforce the idea that doing the Round Dance in this way shows them that they need to use their minds to make good choices every day, to give their bodies physical activity, to eat good foods every day, and to take time to listen and learn to help them stay healthy.

9. After students have completed the dance, have them remove their messenger pictures from around their necks. Place all the messengers on a large sheet of paper, gluing or taping them in a circle like the *Health Is Life in Balance* poster.

The classroom poster will represent who students think is important for good health for all four parts of their lives. It will be their classroom poster of *Health Is Life in Balance* with *their* messengers. Display their work in a prominent place in the room or hallway.

10. Distribute Copymaster 5.3, *School-to-Home Activity: Let's Move—The Round Dance*, to each student. Tell students to give this handout to their parents, guardians, or older siblings. Explain that this is a way to share what they are doing with their families.

Possible Extension

Read the Eagle Book Knees Lifted High as an alternative or additional activity.







At a Glance

Overview

In Lesson 6, *My Health Message to Others*, students have the opportunity to demonstrate what they have learned in Unit 1. Students work in teams to construct a good health message in the form of a storyboard that reflects their understanding. The class will put all the storyboards together to make a comic strip of good health messages. Students can then act out their stories.

Enduring Understandings

Because this is the Evaluate activity, no new concepts are introduced.

Teacher Background

No additional information is needed for this lesson.

Outcomes and Indicators of Success

By the end of this lesson, students should be able to demonstrate their understanding of good health.

They will demonstrate their understanding by

- creating a good health message with their team,
- combining their team's good health message with other teams' messages to make a story in the form of a comic strip, and
- demonstrating their understanding by acting out their messages for the class.

In Advance

Student Materials

For each student
scissors
crayons or markers
1 glue stick
1 8¹/₂ x 11-inch blank sheet of paper
1 copy of Copymaster 6.1, A Good Health Message

Process and Procedure

 Review what students have learned in the past five lessons. Call attention to definitions, T-tables, and sentences you have written on the board or chart paper. Have students read them all aloud for review and literacy practice. Lesson 6: My Health Message to Others Evaluate



- 2. Tell students that now they will have an opportunity to tell a message of good health to others by making a comic strip using Copymaster 6.1, A Good Health Message. Tell students that their messages should include what they have learned in this unit.
- **3.** Divide the class into pairs or small teams of students. Instruct students to use as many of the characters on Copymaster 6.1 as they like to write a message of good health.

They can cut the characters apart, glue them on their papers, add background pictures, and so on. Tell students in advance that teams will act out their messages. Explain that teams should plan their presentation so that each student has a role in acting out the team's message.

4. Allow students enough time to plan and write their messages. Have students cut out and glue their characters to a piece of paper (with landscape orientation). This will represent one frame in the comic strip or their storyboard.



5. When students are finished with their good health message storyboard, tape each message together to form a comic strip. Have each team act out their good health message for the class.

Exploring a Healthy Balance

UNIT 1 COPYMASTERS

Copymaster 1.0, Letter to Parents or Caregivers

- Copymaster 1.1, The Gifts of the Trees
- Copymaster 1.2, Health Is Life in Balance Circle
- Copymaster 2.1, Balance Pictures
- Copymaster 3.1, *Modeling Balance T-Table*
- Copymaster 5.1, Messenger Man
- Copymaster 5.2, Messenger Woman
- Copymaster 5.3, School-to-Home Activity: Let's Move—The Round Dance

Copymaster 6.1, A Good Health Message

Dear Parents or Caregivers,

Welcome to the Diabetes Education in Tribal Schools program. Your child will be learning the *Health Is Life in Balance* curriculum, which will provide a learning experience in areas of type 2 diabetes, obesity, and prevention. This letter gives you an overview of the background and characteristics of the curriculum. We will also request your help in making the learning experience for your child more meaningful by including family and at-home activities designed to reinforce lessons in the curriculum. Your active involvement in the curriculum activities has the potential to positively affect the health of your child.

"The Diabetes Epidemic" Need for New Curriculum

Diabetes in American Indians and Alaska Natives (NDIC, NIDDK, NIH) ww.niddk.nih.gov

- Diabetes has tripled in the last 30 years.
- Type 2 diabetes is steadily increasing in children.
- The prevalence of obesity is steadily increasing in children.
- About 14 percent of 12 to 19-year-olds are classified as obese.
- The Centers for Disease Control and Prevention predicts 1 out of 3 American children born since 2000 will develop diabetes.
- About 15 percent of American Indians and Alaska Natives have been diagnosed with diabetes.
- American Indians and Alaska Natives are 2.6 times more likely to have diagnosed diabetes.
- Type 2 diabetes is becoming increasingly common in all youth, especially American Indian and Alaska Native youth.
- American Indians and Alaska Natives have physiological and lifestyle risk factors for type 2 diabetes.
- Both diet and physical activity have changed for many American Indian and Alaska Native groups over the past several decades.

With these grim statistics, one fact is encouraging: *type 2 diabetes can often be prevented or delayed through a balanced lifestyle that includes healthy eating and activity habits and maintaining normal weight.* Clearly, for the

millions of children who are likely to develop diabetes, learning how to make healthful food and activity choices and why they should is potentially lifesaving.

Health curriculum materials usually cover diet and activity, but not always from a scientific perspective. Also, not all schools offer health as a subject at all grade levels. So instructional materials that explore the science of healthy lifestyles and diabetes prevention are valuable. In addition, *Health Is Life in Balance* is designed to be culturally appropriate for a highly vulnerable group of children, American Indian and Alaskan Native students, as well as for their classmates from diverse ethnic backgrounds.

Overview of the K–4 Curriculum Plan: Enduring Concepts

- Health is life in balance.
- All animals need nutritious food and daily exercise to stay healthy.
- Humans obtain energy from the sun by eating a variety of plant and animal sources of food in balance.
- Diabetes is an imbalance of health at many levels.
- Personal health behaviors can help reduce the risks of diabetes.
- Making healthy choices includes many aspects of life: food, water, rest, exercise, senses, safety, and relationships with others.
- The Circle of Life represents balance in important aspects of life: body, mind, feelings, and environment.
- Traditional food sources and physical activities of Native American ancestors are different than those in the present day, and we can learn important things from the past.
- Individuals, families, and communities can work together to maintain health and prevent diseases.
- Students can develop skills and have opportunities to become scientists or health providers.

The Round Dance

The Round Dance graphic on the next page shows concepts of balanced lifestyles in an age-appropriate, appealing way that is relevant for American Indian children. Many tribes and intertribal groups use the Round Dance as a representation of the Circle of Life that promotes balance, friendship, unity, equality, and the earth. Both the latest medical research about preventing disease and promoting health and the traditional teachings of Native Americans emphasize ideas of balance in a person's whole life. Thus, it is a central theme for our materials. This curriculum uses the Round Dance to promote nutrition, physical activity, diversity, and respecting self and others—thus illustrating *Health Is Life in Balance*. *Health Is Life in Balance* was developed by educators from eight Tribal Colleges and their university partners. Team members frequently consulted with in-service teachers and reviewed research on science education, early education, and culturally appropriate education for American Indian students. Funding for the Diabetes Education in Tribal Schools program is provided by the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) within the National Institutes of Health (NIH).

We would like to again welcome parents and caregivers to the *Health Is Life in Balance* curriculum. It is our hope that your participation in the school-to-home activities will help engage your child in his or her learning and that the materials will be beneficial in guiding your children to lead healthy lives.

Sincerely,





The Gifts of the Trees

Many, many moons ago, when Man first came to live on the earth, he looked at the vastness that surrounded him, and a great loneliness filled his heart. "How shall I live?" he cried. "The world is so big, and I am alone!"

The trees were glad the Great Spirit had sent Man to live among them and wanted to help him. "You are not alone. We are your brothers and we will help you," they murmured softly. Man felt comforted.

The maple tree touched him with her tender branches. "I will give you sweet water to drink and to make into sugar," she said.



Cory Fountaine

The hickory tree shook a host of nuts from his tall branches. "See? I will give you food to satisfy your hunger." "We will help," spoke up the hickory tree's cousins, the chestnut, the beech, and the walnut.





"Then you will need baskets," said Goungah, the elm tree. "Make them with my soft bark and strengthen them with thongs of my tough muscles."

Now there was happiness in the heart of Man as he set out to explore the world, for he had food and drink and friends. But soon a wide river blocked his trail. "Alas, I can go no further!" he cried.

Wigwass, the birch tree, grew near the great river and heard his cry. "I will help you, my brother," she called. "Take strips of my skin and tie them together with the tough thongs given to you by the elm tree. Then you will have a canoe strong enough to carry you across the wide rivers."

Man did as Wigwass suggested, and soon the fearful river was behind him. But in the meantime, the sun had entered his lodge in the west. Man shivered with cold.

This time, he eyed the balsam, who saw her brother's need. "Do not suffer cold," she said. "In my heart there is much sunfire. Rub my branches together, and they will give you sparks to kindle a flame."

Man followed the balsam's instructions, and soon a great campfire roared before him. When he was warm, his eyes grew heavy with sleep.

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"It's our turn to help," spoke the great pine and the cedar. And they shook a mound of sweet-smelling needles beside Man. He spread them into a soft bed and slept.

All through the long night North Wind blew his icy breath over him. But Man rested warm and secure until Wabun, the east wind, chased the darkness down the valley and brought the morning to Man's campfire.

When he awoke, there was a great gratitude in his heart. "How can I repay you for your kindness?" he asked the trees.

"We want no pay," they replied. "Giving is the secret of our happiness. We only ask that you use the gifts of the forest wisely. Never waste or destroy what the Great Spirit has given freely to his children."

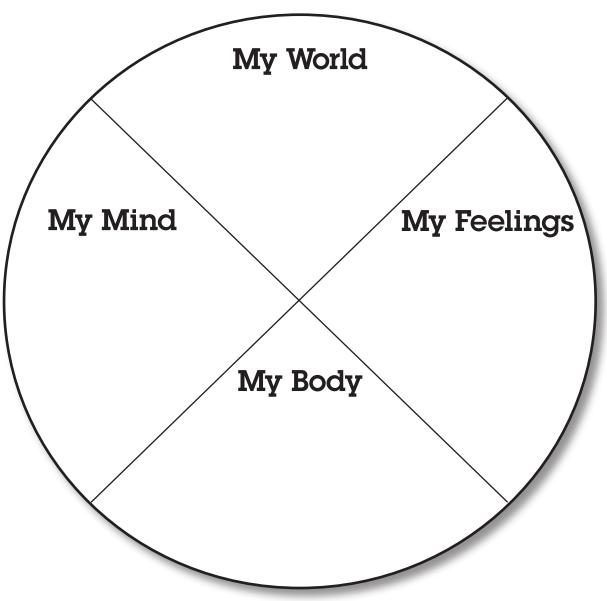
Indians have never forgotten. They take only what they need and leave the rest for others.

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Health Is Life in Balance Circle



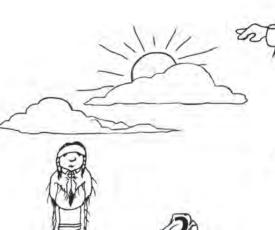


1.2

Community, Prevention, Lifestyle, Education Diabetes Education in Tribal Schools Health Is Life in Balance **Copymaster 1.2** Grades 3–4 Unit 1, Lesson 1 Health Is Life in Balance Circle

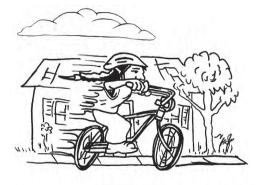






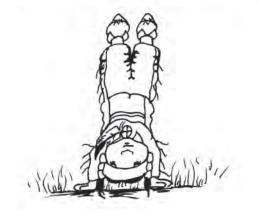












Community, Prevention, Lifestyle, Education Diabetes Education in Tribal Schools Health Is Life in Balance

Copymaster 2.1 Grades 3–4 Unit 1, Lesson 2 Balance Pictures



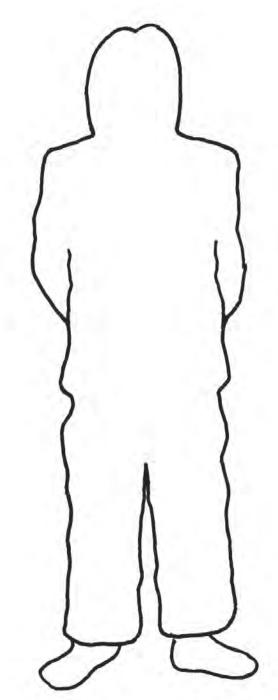
Paper Plate Model

Our Lives





Messenger Man



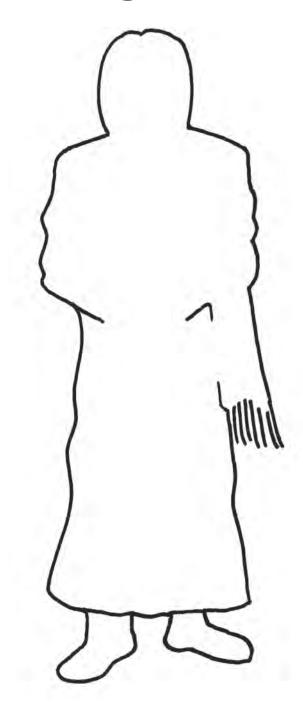
6

Community, Prevention, Lifestyle, Education Diabetes Education in Tribal Schools Health Is Life in Balance

Copymaster 5.1 Grades 3–4 Unit 1, Lesson 5 Messenger Man



Messenger Woman





5.2

Community, Prevention, Lifestyle, Education Diabetes Education in Tribal Schools Health Is Life in Balance **Copymaster 5.2** Grades 3–4 Unit 1, Lesson 5 Messenger Woman



School-to-Home Activity:

Let's Move— The Round Dance

Your child is learning about the Native American Round Dance, a social dance that is done by many tribes. Your child is learning that the Round Dance is one example of physical activity that is special to many Native American tribes.

The Round Dance goes by many names for different tribes: *Kahomni*, 2-Step, Owl Dance, Friendship Dance, and Rabbit Dance. It is a social dance that often is a part of Native American powwow activities.

A powwow is a celebration where people gather to sing Native American songs, dance, see family and friends, conduct honorings such as giveaways, and engage in competition in singing and dancing.

Powwows take place all over the United States and Canada. During the summer months, there is usually a powwow every weekend in different areas of the United States. Contact the tribe in your area and find out when their annual celebration or powwow takes place. Take your family to the powwow and participate in the intertribal dancing and the round dancing. Powwows are social events and are open to the public (some powwows may require an admission fee). You will find that a powwow is well attended by Native American and non-Indian people alike.

Listen to the master of ceremonies (MC), who is the official who lets everyone in attendance know the activities and events that are taking place during a powwow. The MC will let the audience know when the dances are taking place where

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anyone is welcome to participate. These dances are called Intertribals; or the MC will call for the Round Dance.

Your children can show you what they have learned in their class by your family's attendance and participation at a powwow. It will also reinforce the importance of physical activity as your family strives to stay in balance and be healthy.

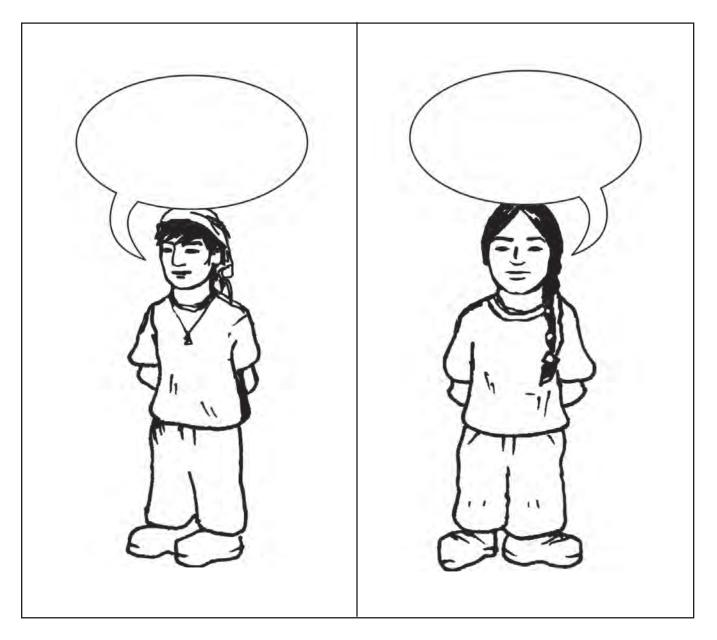
Web resource for more powwow information: PowWows.com

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A Good Health Message



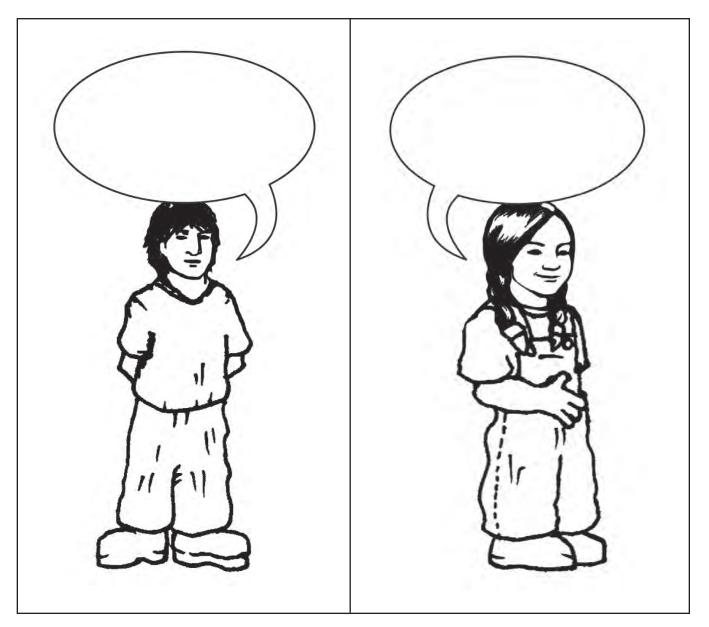
page 1 of 3



Community, Prevention, Lifestyle, Education Diabetes Education in Tribal Schools Health Is Life in Balance **Copymaster 6.1** Grades 3–4 Unit 1, Lesson 6 A Good Health Message



A Good Health Message



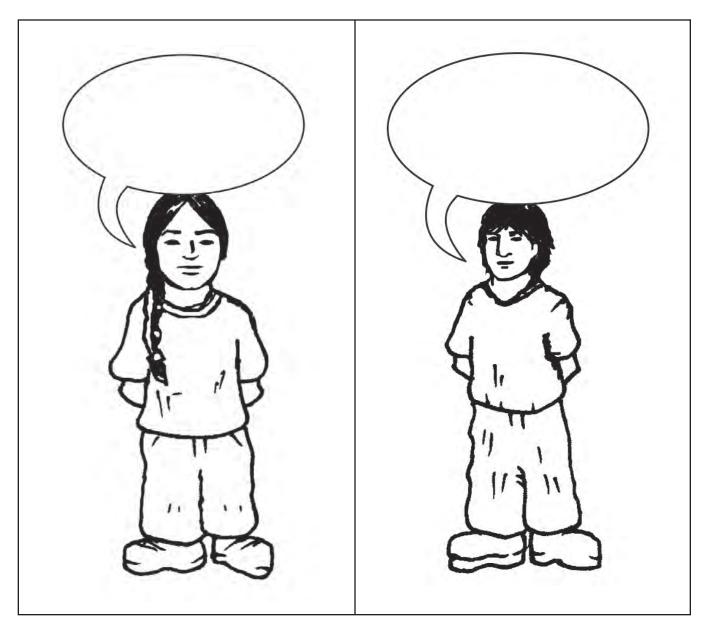
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Community, Prevention, Lifestyle, Education Diabetes Education in Tribal Schools Health Is Life in Balance **Copymaster 6.1** Grades 3–4 Unit 1, Lesson 6 A Good Health Message



A Good Health Message



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Community, Prevention, Lifestyle, Education Diabetes Education in Tribal Schools Health Is Life in Balance **Copymaster 6.1** Grades 3–4 Unit 1, Lesson 6 A Good Health Message



Health Is Life in Balance

Grades 3–4 UNIT 2: BEING SMART ABOUT BEING HEALTHY





Unit 2 Overview

Making healthful choices in foods and activities helps create a healthy balance in life. The skills for making good choices of meals and snacks are learned from identifying food groups, nutrients, and portion sizes in foods, and from understanding the motivation behind ads that persuade people to buy products. Using the *MyPyramid for Kids* model as a guide, students learn skills for lifelong balance in health with good food choices and physical activity. Individuals, families, and communities use scientific and cultural knowledge to promote well-being and prevent disease.

DETS Grades 3–4 Unit 2, *Being Smart about Being Healthy*, consists of five lessons that will take eight to nine class sessions of 30–45 minutes. Students will develop the skills they need to become informed consumers by learning to evaluate products and beginning to understand the motivation behind the commercial messages they continually see and hear. Students will learn about food groups, nutrients, and portion size by learning to read food labels. In learning about more healthful food choices and being physically active every day, students will acquire the skills to prevent obesity and diabetes.

Unit 2 Correlation with National Standards

National Science Education Standards

In today's classroom, it is important that curriculum materials help teachers address the standards that have been set for various subject areas. The content of this curriculum unit ties directly to the National Research Council's 1996 *National Science Education Standards*. The following chart indicates which standards are addressed by the different lessons within this unit.

Content Standards: Grades K-4

Content Standard A: As a result of activities in grades K–4, all students should develop	Correlation with the DETS 3–4 Unit 2
Abilities necessary to do scientific inquiry	
Employ simple equipment and tools to gather data and extend the senses.	Lessons 2, 4
Use data to construct a reasonable explanation.	Lessons 1, 3, 4
Content Standard F: As a result of activities in grades K–4, all students should develop understanding of	
Personal health	
Individuals have some responsibility for their own health. Students should engage in personal care—dental hygiene, cleanliness, and exercise—that will maintain and improve health.	Lessons 1, 4
Nutrition is essential to health. Students should understand how the body uses food and how various foods contribute to health. Recommendations for good nutrition include eating a variety of foods, eating less sugar, and eating less fat.	Lessons 1, 2, 3, 4, 5

Source: Reprinted with permission from National Science Education Standards. © 1996 by the National Academy of Sciences, National Academies Press, Washington, D.C.



The National Health Education Standards

The content of this unit also meets several of the *National Health Education Standards*, as outlined in the chart on the next page.

This unit also addresses standards in the areas of language arts, math, and social studies. See *Appendix A* for information about the correlation of the unit's lessons to these other standards.



Standards and Performance Indicators: Grades 3–5

Standard Number	National Health Education Standard	Correlation to the DETS 3–4 Unit 2	
1	Students will comprehend concepts related to health promotion and disease prevention to enhance health.		
As a result of health instruction in grades 3 through 5, students will			
1.5.1	Describe the relationship between healthy behaviors and personal health.	Lessons 1, 2, 3, 4	
2	Students will analyze the influence of family, peers, culture, media, technology and other factors on health behaviors.		
As a result of health instruction in grades 3 through 5, students will			
2.5.2	Identify the influence of culture on health practices and behaviors.	Lessons 1, 5	
2.5.3	Identify how peers can influence healthy and unhealthy behaviors.	Lesson 1	
2.5.5	Explain how media influences thoughts, feelings, and healthy behaviors.	Lesson 1	
2.5.6	Describe ways that technology can influence personal health.	Lesson 1	
3	Students will demonstrate the ability to access valid information and products and services to enhance health.		
As a result of health instruction in grades 3 through 5, students will			
3.5.2	Locate resources from home, school, and community that provide valid health information.	Lessons 2, 4	
5	Students will demonstrate the ability to use decision-making skills to enhance health.		
As a result	of health instruction in grades 3 through 5, students will		
5.5.3	List healthy options to health-related issues or problems.	Lesson 2, 3, 5	
5.5.6	Describe the outcomes of a health-related decision.	Lesson 4	
7	Students will demonstrate the ability to practice health-enhancing behaviors and avoid or reduce health risks.		
As a result	of health instruction in grades 3 through 5, students will		
7.5.1	Identify responsible personal health behaviors.	Lesson 3	
7.5.2	Demonstrate a variety of healthy practices and behaviors to maintain or improve personal health.	Lesson 3	
8	Students will demonstrate the ability to advocate for personal, family, and community health.		
As a result	of health instruction in grades 3 through 5, students will		
8.5.1	Express opinions and give accurate information about health issues.	Lessos 4, 5	
8.5.2	Encourage others to make positive health choices.	Lessons 4, 5	
	1		

Source: Reprinted with permission, from the American Cancer Society. National health education standards: Achieving excellence (2nd ed.). Atlanta, GA: American Cancer Society. 2007, www.cancer.org/bookstore.



Teacher Strategies for Unit 2

Timeline for the Lessons

The timeline provides a guideline for completing the five lessons in Unit 2. The actual amount of class time needed for the unit will reflect the practice of individual teachers. Some classes will spend more time on activities and discussions than others. Depending on the amount of time available, you may need to complete lessons over multiple days.

Lesson 1, Recognizing "Tricky Treats": 60 minutes

Part I, Advertising Tricks: 30 minutes

Part II, Tricky Treats: 30 minutes

Lesson 2, Becoming a Smart Eater: 45 minutes

Lesson 3, Becoming a Smart Consumer: 45 minutes

Lesson 4, Thinking about My Food Choices: 90 minutes

Part I, My Food Journal: 45 minutes

Part II, What about Those Snacks?: 45 minutes

Lesson 5, A Celebration of Community Diversity: 135 minutes

Part I, Planning a Celebration Feast: 45 minutes

Part II, Get the Message Out: 45 minutes

Part III, Let's Celebrate!: 45 minutes

The timeline assumes that you will teach the lessons on consecutive days. If several days separate the lessons, you may need additional time to review the previous lessons. This review will help students make stronger connections between the lessons.

Advance Preparation

1 Month Ahead

Begin looking at magazines or other resources for advertisements for foods. Cut out ads and save them for use in Lesson 1.

Begin saving empty bags or boxes from food products that have Nutrition Facts labels on them (for Lesson 2). If you wish, ask students to start collecting and bringing in empty food packages that have the Nutrition Facts labels on them.

2 Weeks Ahead

Begin reviewing lessons.

If you wish to take students on a field trip to a convenience store (see Lesson 4), make arrangements with the store, plan for transportation, and send permission forms home to be signed by parents or guardians. Begin planning the party or feast (see Lesson 5). Decide how much time to allow for this celebration. Invite parents and ask for their help in supplying food.

1 Week Ahead

Make photocopies and transparencies. Gather necessary materials.

Read the Eagle Books *Tricky Treats* and *Through the Eyes of the Eagle* to familiarize yourself with the content.

Display a color copy of the MyPyramid for Kids poster (on the TRCD) in your classroom.

Teacher Materials for the Unit

food ads from magazines or video from Saturday morning cartoon ads

variety of empty boxes or bags of foods with Nutrition Facts labels, such as cereals,

snack foods, and breads

table tents for each team that have the following labels:

- "sugar" (for teams looking at cereal labels)
- "fat" (for teams looking at snack food labels)
- "fiber" (for teams looking at bread labels)

hand broom and dustpan for cleanup

tape

selection of food items determined by student teams Native American music on the TRCD Round Dance video on the TRCD (optional) CD player 1 color copy of the *MyPyramid for Kids* poster on the TRCD Eagle Book: *Tricky Treats* Eagle Book: *Through the Eyes of the Eagle* 1 copy of Copymaster 4.3, *The New Food Guide Pyramid*

Student Materials for the Unit

For each student
crayons
blank sheets of paper
1 copy of Copymaster 3.1, *Choose Sensible Sizes*1 copy of Copymaster 3.2, *Cereal and Cookie Labels*1 copy of Copymaster 3.3, *Bread and Snack Labels*1 copy of Copymaster 4.1, *What I Ate and Drank during One Day*1 copy of Copymaster 4.2, *MyPyramid for Kids*1 copy of Copymaster 4.4, *Did I Make Good Choices?*



For each team of 3–4 students

1 box of cereal
1 measuring cup (equal to 1 serving of their cereal)
2 cereal bowls (paper or plastic, about the same size as a typical cereal bowl)
extra paper or plastic bowls
1 sheet of poster board or chart paper for advertisements
markers
paper
scissors
old magazines
3–4 glue sticks

Vocabulary List

advertisement: An advertisement is a public promotion or communication that tells people about a product and encourages them to buy it.

carbohydrates: Carbohydrates are one of the main dietary components and provide Calories, vitamins, minerals, and fiber. The body breaks down carbohydrates into glucose (blood sugar), which is used for energy by the body. Good sources of carbohydrates include fruits, vegetables, whole grains, and beans.

consumer: A consumer is a person (or other animal) who eats a food or a person who buys a product.

diabetes: Diabetes is a disease that happens when the body does not use sugar (glucose) in the right way.

exercise: Exercise is a physical activity using your muscles to keep fit.

fat: Fat is one of the three nutrients (along with protein and carbohydrates) that supply Calories to the body. Fats are an important energy source found in animal and plant tissue. Fat serves as the storage substance for the body's extra Calories. When the body has used up the Calories from carbohydrate, which occurs after the first 20 minutes of exercise, it begins to depend on the Calories from fat.

fiber: Fiber is a stringy or rubbery substance found in foods like oatmeal or the skin of beans that adds bulk to our food and helps us digest it properly.

nutrition: Nutrition refers to being nourished by food.

protein: Proteins are an essential nutrient in your diet to help your body repair cells and make new ones, and are also important for growth and development. Proteins are found in animal foods such as meat, fish, poultry, eggs, milk, and milk products, and in vegetable foods such as beans, peas, nuts, seeds, and grains.

oil: Oils are fats that are liquid at room temperature. Oils come from vegetables or fish. **sugar:** Sugar is a sweet-tasting substance from plants that gives energy to the body and can be stored as fat.

Monitoring Students' Progress

Assessing what students have learned during an activity, lesson, or unit is an important part of your role as a teacher. Because assessment can play a different role at different times, Unit 2 has a variety of assessment strategies built in to the procedures.

The Engage lessons often include a mechanism for learning more about the preconceptions that students have before new content material is presented. From research on learning, we know that it is important for students to recall and think about their current knowledge and ideas. Some of this information is likely to be accurate and correct, but often this opportunity enables students to consider what they know, what questions they have, and even what discrepancies they have in their knowledge. Only after considering their prior knowledge will they be ready to add new information or revise incorrect ideas.

Assessment is also important as students progress through the lessons in the unit. In this unit, an icon in the margin denotes an opportunity for assessment. The icon indicates stages at which you can assess students' understanding of the enduring understandings or major concepts the lesson is designed to convey. Specific strategies for evaluating students' understanding are provided with the icon. Some of the strategies are informal and quick, while others may be more in depth. On the basis of students' understanding at these points, you can modify your teaching practices accordingly.

The Evaluate lesson in the unit provides an opportunity for students to synthesize what they have learned during the previous lessons. By completing the Evaluate lesson, students demonstrate what they have learned and apply their understanding to new situations.

Finally, some teachers may wish to use an end-of-the-unit quiz to assess students' understanding of the ideas and concepts. The accompanying Teacher Resource CD (TRCD) includes a short test bank of questions that can be used for this purpose. The questions are in a variety of formats—multiple choice, true-false, short answer, and problem solving. As you design your end-of-unit quiz, select the questions from the test bank that represent the concepts you focused on and that align with the way you taught the unit.





Health Is Life in Balance

Unit 2 Being Smart about Being Healthy Student Lessons









Overview

Lesson 1, *Recognizing "Tricky Treats,"* has two parts. In Part I, students examine magazine ads, packaging, and commercials for "tricks" used to persuade consumers to buy a product. In Part II, students connect what they have learned about advertising with information in the Eagle Book *Tricky Treats*. Students learn about the tricks Coyote uses to persuade the children to eat unhealthy snacks.

Enduring Understandings

- Sometimes advertisers use a variety of ways to trick consumers into buying their products.
- There are snacks that we should eat only sometimes and others we can eat every day.

Teacher Background

This lesson begins with a look at advertising. How do we begin to combat the multimilliondollar promotion and advertising campaigns for foods of questionable nutritional content? In a word, *education*—by teaching children the skills they need to become informed consumers. Even at an early age, children can evaluate products and begin to understand the motivation behind the commercials they continually see and hear.

Advertisers use a variety of means to influence and persuade children, many of which are disguised as games or promotions. Some of the ways that companies market products to children include the use of celebrities, continued exposure, exaggerated health benefits, and the offer of "free" toys and wearable advertisements. We should understand that companies are in business to make money, and advertising is their way to let people know about their products and persuade people to buy them.

According to research funded by the National Institutes of Health, many obese children and adolescents have impaired glucose tolerance, a condition that often appears before the development of type 2 diabetes. The only effective way to prevent and control type 2 diabetes in children is to promote a more healthful pattern of growth and development. Because children are growing, they need plenty of calories and nutrients and should not follow calorie-restricted diets. A diet rich in fruits, vegetables, beans, whole grains, nuts, lean-protein foods, and nonfat dairy products should form the foundation of a healthpromoting diet. A minimum of one hour of physical activity each day is crucial for both physical development and weight management.

You can find additional background material in *An Overview of Diabetes* or in the *Resource Directory* section of *Introductory Information*.

Lesson 1: Recognizing "Tricky Treats" Engage



Outcomes and Indicators of Success

By the end of this lesson, students should be able to

1. recognize some of the tricks used in advertisements.

They will demonstrate their ability by

- examining a variety of advertisements, packaging, and commercials for commonalities and
- connecting these tricks with what encourages them to want to purchase certain products.
- recognize the difference between sometimes foods and everyday foods and snacks. They will demonstrate their ability by listening to and recalling information from the

Eagle Book Tricky Treats.

In Advance

Teacher Materials

food ads from magazines or video from Saturday morning cartoon ads Eagle Book: *Tricky Treats*

Process and Procedure

Part I: Advertising Tricks

- 1. Before the lesson begins, display the food advertisements in the classroom.
- Ask the students, in turn, to say aloud one favorite snack food they like to eat. Accept all answers and make sure each student has the chance to list at least one favorite snack.
- **3.** Call the students' attention to the advertisements that are posted or ask them to describe an ad that they have seen on TV or in magazines. Ask them what they notice about the advertisements or what is similar in all of the advertisements.

Students should notice that the ads are brightly colored and may use popular sports, movie, or cartoon stars in the ad. They may also notice that all the people and children in the advertisement appear healthy and happy. Often, there is a free toy or trading card offered for those who buy the treats. Even the time of day TV ads are aired is aimed at children. You may ask students if they would consider buying a snack if the person advertising the snack were mean, sickly, or obese.

4. Ask students to identify the "tricks" or persuasive things advertisers use to appeal to us.

If these were not mentioned before, connect the characteristics of the advertisements mentioned in Step 3 with tricks that advertisers use to persuade us to buy their products.

- 5. Tell students that they can learn how to recognize these tricks. They can also learn how to eat well, get plenty of exercise, and prevent diabetes.
- **6.** Have students recall what they learned about diabetes in Unit 1. Write the definition on the board:

"Diabetes is a disease in which the body cannot use sugar in the right way."

7. Ask students if they remember the name for the specific kind of sugar they learned about in Unit 1.

Students should remember that glucose is the kind of sugar the body uses for energy.

8. Tell students that children are becoming overweight at an earlier age and the rate of diabetes is rising rapidly in youth in the United States. Ask students if they can think of reasons why children are becoming overweight at an earlier age.

If students need a hint, remind them of what they have been thinking about (the ads for sugary snacks). Ads for sugary and fatty foods contribute to the desire by children to eat these foods and pressure their parents to buy them.

Note to Teacher: Be sensitive to students in your class who may be overweight.

Part II: Tricky Treats

 Gather the students together for a reading circle and hold up the Eagle Book *Tricky Treats*. Tell them that they are going to hear some wise ideas as they listen to the story.

Read *Tricky Treats* to your students. Stop periodically during the story and have a student recap what has happened. This will help keep your students focused on the story.

2. Have students discuss the main characters in the story.

Students should mention the following characters:

- The Great Bald Eagle, a wise friend of the children who gives good advice
- Miss Rabbit, who knows all about healthy fruits and vegetables
- Tricky Coyote, who tries to persuade children to eat soda and potato chips
- **3.** At the end of the story, ask questions like the following to emphasize these points of the story:
 - "What two kinds of snacks did you learn about in the story?" Answer: Everyone likes to snack, but there are everyday snacks and snacks that are to be eaten only sometimes.



- "What does Coyote do in the story?" Answer: Coyote (who is known to be a sneaky animal and likes to trick others) tries to tempt others into eating snacks that are full of sugar and fat.
- "Can you name some healthy snacks that can be everyday snacks?" Answer: The students learn to choose healthy snacks like water, apple slices, carrots, and gifts that are grown in the earth.
- "Other than eating healthy snacks, what else can you do to stay healthy?" Answer: Many answers are acceptable but make sure that someone says that exercise and moving our bodies every day helps us stay healthy in body and spirit.
- What disease did we learn about in Unit 1?" Answer: Students should say diabetes. Tell them that everyone, even children, can get diabetes, but we can reduce the risk of diabetes by learning to make healthy choices and recognizing the tricky treats.
- 4. Remind students that physical activity is also important every day. Ask students to recall the character in the story who said that it is important to move our bodies every day to help stay healthy in body and spirit.

The character in the story who said that activity is important is little Hummingbird. Have students stand up and vigorously move their arms and legs while they clap a beat or step or dance to music. If possible, have students take a short walk or run outside or in the gym at the end of this activity.

5. Ask students to compare what they learned in the story about tricky treats to what they learned about advertisements.

You may have to help younger students make these connections, but the important point is that some advertising is very tricky. It is important to read labels (which they will do in a later lesson) and be careful about their food choices.





Overview

In Lesson 2, *Becoming a Smart Eater*, students are introduced to Nutrition Facts labels. They learn that these food labels are a way to judge whether a food or snack is healthy. Advertisements are sometimes tricky, and students should become smart at making healthful food choices. Students examine nutrition labels from a variety of breakfast cereals, snack items, and breads. They will learn to read and rank products based on the amounts of sugar, fat, and fiber contained in the food. Students learn that healthful foods have low sugar, low fat, and high fiber content.

Enduring Understandings

- Nutrition Facts labels give us important information about food.
- We can make smart food choices by examining food labels.
- Healthful foods are ones that are lower in sugar, lower in fat, and higher in fiber.

Teacher Background

The following information is taken from the Food and Drug Administration (FDA) of the Department of Health and Human Services Web site (FDA, 1999), http://www.cfsan.fda. gov/~dms/fdnewlab.html. The FDA is responsible for regulating the information reported on Nutrition Facts labels.

Grocery store aisles are avenues to greater nutritional knowledge. Under regulations from the FDA and the Food Safety and Inspection Service of the U.S. Department of Agriculture, the food label offers more complete, useful and accurate nutrition information than ever before. With today's food labels, consumers get:

- nutrition information about almost every food in the grocery store
- distinctive, easy-to-read formats that enable consumers to more quickly find the information they need to make healthful food choices
- information on the amount per serving of saturated fat, cholesterol, dietary fiber, and other nutrients of major health concern
- nutrient reference values, expressed as % Daily Values, that help consumers see how a food fits into an overall daily diet
- uniform definitions for terms that describe a food's nutrient content—such as "light," "low-fat," and "high-fiber"—to ensure that such terms mean the same for any product on which they appear

Lesson 2: Becoming a Smart Eater Explore



- claims about the relationship between a nutrient or food and a disease or health-related condition, such as calcium and osteoporosis, and fat and cancer. These are helpful for people who are concerned about eating foods that may help keep them healthier longer.
- standardized serving sizes that make nutritional comparisons of similar products easier
- declaration of total percentage of juice in juice drinks. This enables consumers to know exactly how much juice is in a product.

The supermarket bread aisle is packed with hearty-sounding multigrain and wheat varieties. But many of them are not much more than dressed up white bread. Fiber is important in preventing many diseases. In general, less-refined foods with high fiber, like intact whole grains and legumes, are less-rapidly digested so they enter the system more slowly. Scientists have discovered that people who eat the lowest fiber and the most sugar and refined starches, like white bread, pasta, and potatoes, have a higher risk for diabetes.

Outcomes and Indicators of Success

By the end of this lesson, students should be able to

1. begin to understand the importance of food labels.

They will demonstrate their understanding by

- discussing what it means to be smart about food choices;
- examining Nutrition Facts labels for important information; and
- documenting the amounts of sugar, fat, and fiber in food products.
- **2.** describe examples of healthful foods.

They will demonstrate their ability by

- comparing foods high in fat and sugar with those that are low in fat and sugar,
- comparing foods high in fiber with those low in fiber, and
- selecting foods that are the healthiest by finding ones that are low in sugar and fat and high in fiber.

In Advance

Teacher Materials

variety of empty boxes or bags of foods with Nutrition Facts labels, such as cereals, snack

foods, and breads (see Preparation)

table tents for each team with the following labels (see Preparation):

- "sugar" (for teams looking at cereal labels)
- "fat" (for teams looking at snack food labels)
- "fiber" (for teams looking at bread labels)

Student Materials

For each student

1 copy of Copymaster 4.1, What I Ate and Drank during One Day (optional)

Preparation

Select a variety of boxes and bags of foods with Nutrition Facts labels. One group of foods should be breakfast cereals with sugar. Try to have some cereals that appear healthful but have a hidden high-sugar content. (For example, some raisin bran cereals may have a sugar coating on the cereal or raisins making them less healthful than other raisin bran cereals that do not have the sugar coating.) The second group should be snack foods such as pretzels, fried chips, baked chips, packaged popcorn, and snack crackers. This is a good opportunity for you to choose items that students listed in the beginning of the unit as their favorite snacks. The third group is breads such as white, wheat, and 100 percent whole wheat bread.

If you have difficulty collecting enough empty boxes or bags with Nutrition Facts labels, you could ask students to bring in empty packages. The difficulty with this approach is that you may not get the variety that you need. If you take this approach, tell students to start saving packages approximately two weeks before beginning this unit.

Prepare table tents for each team that have the following labels (figure 2.1):

- "sugar" (for teams looking at cereal labels)
- "fat" (for teams looking at snack food labels)
- "fiber" (for teams looking at bread labels)

Arrange the room so that student desks are placed together in teams of three or four. Each team of students should be assigned either cereals, snack foods, or breads. Try to have one labeled package per student. Ask parents or a parent organization for help in obtaining these food items. Some items can be used in the Evaluate lesson of the unit.

Process and Procedure

1. Begin the lesson by having students recall what they learned from the Eagle Book *Tricky Treats.*

Make sure that students recall that there are everyday snacks and sometimes snacks.

2. Discuss what it means to be smart about food choices.

Tell students that a major component of becoming smart about food is to learn to make thoughtful choices when choosing to eat or buy a food product.

3. Connect this lesson with the lesson, *Recognizing "Tricky Treats"*, by asking students how they know if a snack is an everyday snack or a sometimes snack. You will get a variety of answers, but after students have had a chance to share

Sugar Fat

Figure 2.1: Table tents. Make table tents like this for sugar, fat, and fiber.



their ideas, introduce them to the idea of making smart food choices. Explain to them that nutrition labels give us clues about the foods that we buy.

4. Introduce the idea of learning to read food labels to students.

Explain that learning to read food labels helps students sharpen their nutrition, math, and critical-thinking skills. The Nutrition Facts label is a powerful tool for comparing similar food products. Younger children can begin by comparing one nutrient in different products, and with practice, they can learn to compare several parameters on a label.

- **5.** Ask the students to find the nutrition labels on the food packages on their desks. Tell them that they should look for the title "Nutrition Facts" on the packages. Write "Nutrition Facts" on the board for the students to see.
- 6. Tell your students that they are going to learn ways to be smart about making food choices. Place the table tents on the desks ("sugar" for teams looking at cereal labels; "fat" for teams looking at snack food labels; and "fiber" for teams looking at bread labels).
- **7.** Tell the class to look at the table tent for their assigned food ingredient. Have students find that ingredient on their nutrition labels.

Check for understanding by moving around the room and visiting each team to see if each student can find the assigned ingredient.

8. Instruct the class to find the amount of their ingredient on each package and to rank their foods from the highest amount to the lowest amount of that ingredient.

There may be many numbers on the label, so make sure that students are concentrating on the assigned ingredient only. You can have students simply line up the packages on their desks or have them stand up, hold their packages, and order themselves from highest to lowest.

9. Have each team report to the class by telling what ingredient they were investigating. Ask each student in the team to report the number associated with their ingredient.

Ask the class to agree or disagree with each team's ranking as they report out. Give teams the opportunity to correct any mistakes they may have made.

10. Ask students if they think a higher amount or a lower amount of their ingredient is better for them.

Answers may vary, but use this time to assess your students' understanding of this idea. Diets low in sugar and fat and higher in fiber are healthier. Eating smart can lower their risk for diabetes.

11. Write the words "sugar," "fat," and "fiber" on the board. Have students review what they just learned about smart food choices by putting arrows under each word to represent lower sugar, lower fat, and higher fiber (figure 2.2).

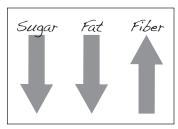


Figure 2.2: More healthful foods. Lower sugar, lower fat, and higher fiber.

12. Ask students to choose one of the snacks or cereals that they would call a sometimes food and one that would be an everyday food.

The snack or cereal with the highest sugar and fat would be a sometimes food.



Note to Teacher: Before Lesson 4, Thinking about My Food Choices, students will need to keep a one-day record of what they eat and drink. Copymaster 4.1, What I Ate and Drank during One Day, provides a table for students to fill in. You may want to give each student a copy of this handout now and explain what students should do so that they will have the handout completed for Lesson 4. Decide which day students should record their food intake.







Overview

In Lesson 3, *Becoming a Smart Consumer*, students learn about the importance of portion size. They discover how to estimate healthy portions by using their hand size. Students deepen their understanding of the importance of nutrition by continuing to analyze and compare nutrition labels on common food items.

Enduring Understandings

- Proper portion size is important even when eating healthful foods.
- Nutrition labels help us to make smart food choices.

Teacher Background

Eating healthful foods is only the first step in staying healthy. Overeating even the healthiest foods can lead to obesity. That is why it is important to understand the recommended portion size for foods that we eat. See Copymaster 4.3, *The New Food Guide Pyramid*, for information that accompanies the new *MyPyramid for Kids*.

Outcomes and Indicators of Success

By the end of this lesson, students should be able to

1. understand that portion size is important in making healthy choices.

They will demonstrate their understanding by

- estimating one serving of cereal,
- measuring the amount of the recommended size for one serving,
- comparing their estimate with the recommended amount for one serving, and
- using their hands to estimate serving size.
- **2.** deepen their understanding about the important information on nutrition labels.

They will deepen their understanding by

- analyzing nutrition labels for portion size, calories, sugar, and fat and
- comparing different foods according to the information on the nutrition labels.
- **3.** learn about being a smart consumer.

They will demonstrate their learning by

- defining the word "consumer" as it relates to those who eat foods and those who buy foods,
- considering how they are consumers, and
- thinking of ways to be smart consumers.

Lesson 3: Becoming a Smart Consumer Explain



In Advance

Teacher Materials

hand broom and dustpan for cleanup 1 copy of Copymaster 4.3, *The New Food Guide Pyramid*

Student Materials

For each student

1 copy of Copymaster 3.1, Choose Sensible Sizes

1 copy of Copymaster 3.2, Cereal and Cookie Labels

1 copy of Copymaster 3.3, Bread and Snack Labels

For each team of 3–4 students

1 box of cereal

1 measuring cup (equal to 1 serving of their cereal)

2 cereal bowls (paper or plastic, about the same size as a typical cereal bowl) extra paper or plastic bowls

Process and Procedure

 Arrange the room so that teams of three or four students have their desks together. Give each team a bowl and a box of cereal. Tell the teams that they should pour cereal into the bowl as if they were eating breakfast.

Allow teams to work together to decide how much cereal to pour into the bowl. Make sure that your bowls are similar to the size of a cereal bowl. Students will likely fill the bowl full.

2. Have students look on the Nutrition Facts label and locate the serving size for their cereal. Have one student from each team come to the board and record the serving size on the board.

Sizes will vary from about 1 cup to less than 1 cup.

3. Give each team another bowl. Instruct students to measure one serving (as labeled on the box) of their cereal into the second bowl. Have students compare the amount they poured in the first bowl (their normal amount) with the amount listed for one serving on the Nutrition Facts label.

Tell students not to pack the cereal in the measuring cup but to just pour it loosely into the cup. This is a good time to reinforce math concepts such as less than, greater than, or equal to, as well as measuring skills.

4. Distribute Copymaster 3.1, *Choose Sensible Sizes*, to each student. Have students find the serving recommendation for cereal and compare it with what

they have measured. If it is different than the serving size on their cereal box, have them measure the cereal again. Have them compare their new serving amount with the way the handout shows to estimate serving size.

Note to Teacher: The hands pictured on the copymaster are adult hands. The hand size is proportional to the body size, so this can be used with child-sized hands. However, the amounts given in the first column will be lower for children.

5. Distribute Copymaster 3.2, Cereal and Cookie Labels, and Copymaster 3.3, Bread and Snack Labels, to teams of students. Have them find the Nutrition Facts labels showing serving sizes and the amounts of different nutrients.

• Serving size: Have students read the serving size. Ask them if the size listed on the label is what we normally think of as one serving. Portion size, especially in foods in restaurants, is usually larger than the recommended serving size. Even when we make nutritious choices, it is possible to eat too much. Become aware of portion sizes and check the label for serving size information. Have students use a measuring cup to see how large or small a portion really is.

Calories, calories from fat, total fat and sugars: Have students compare the different foods for these items.

6. After reading the nutrition labels from a variety of foods, have students discuss what they have learned about foods from reading the labels.

The Nutrition Facts labels make it easy to compare two or more products and can be used to help choose a lower-fat or lower-sugar alternative for a snack.

7. Discuss with your students everyday and sometimes foods. Ask them to sort the foods they have according to what they can find on the Nutrition Facts labels. Talk with the teams about the choices they have made.

Foods low in sugar, low in fat, and high in fiber can be everyday foods. Emphasize that making smart food choices can lower their risk for diabetes.

8. Begin to wrap up the lesson by writing the word "consumer" on the board. Explain that the word consumer has two different meanings: a person who *eats* a food, and a person who *buys a product*. Write these phrases on the board. Ask your students if they are consumers. Have them explain why so that you can assess their understanding of the word consumer.

If they do not think they are consumers because they do not buy products directly, explain that although parents buy the foods that children eat, children pressure their parents about what products they want. Because being overweight puts them at risk for developing diabetes, children and teens need to "get smart" about buying and eating healthy choices.



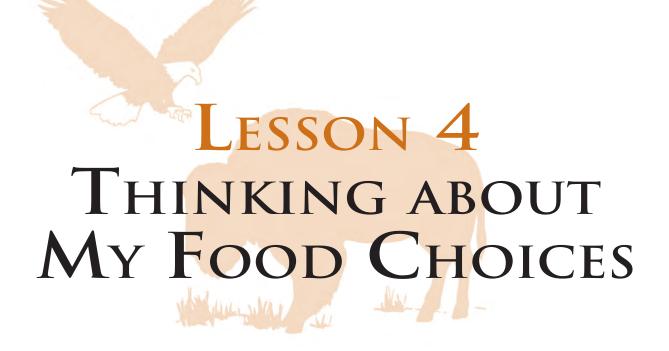


9. Close by asking students how they can make good choices in the foods they buy and eat.

Students should answer by saying they should read the labels and choose foods low in sugar, low in fat, and high in fiber. Remind them that advertisers (like Coyote in the story) try to trick us sometimes. Making thoughtful choices includes learning what foods are healthful to eat and learning how to make healthy decisions about what to buy based on scientific evidence rather than on advertising tricks.

Possible Extension

Take this opportunity to talk about careers in the health and science fields. Discuss the careers of dietitians, nutrition specialists, health advocates, nurses, and doctors. Discuss how these health professionals help people to be smart about being healthy, both by eating healthful foods and by buying foods for their nutrients, not for their advertising message. If possible, invite a local health professional to discuss these ideas with your students. Have students make a thank-you card or a small gift for the visitor in appreciation for his or her visit.





Overview

In Lesson 4, *Thinking about My Food Choices*, students have the opportunity to analyze their food choices for a day by keeping a food journal. They analyze their journals by categorizing foods into the food groups described on the *MyPyramid for Kids* poster. They decide whether they have made healthful food choices. They specifically look at their snack choices in Part II and learn about being "snack smart."

Enduring Understandings

- It is important to choose healthier foods from each food group.
- We should eat more foods from some food groups than from others.
- We can learn to be snack smart.
- Being physically active every day helps to keep us healthy.

Teacher Background

You should review the new food pyramid for children and familiarize yourself with examples of foods in each food group. You can find much of this information on Copymaster 4.3, *The New Food Guide Pyramid*. Additional information is available online (see the *Resource Directory* section in *Introductory Information* for Web sites).

Outcomes and Indicators of Success

By the end of this lesson, students should be able to

- **1.** analyze their own food choices.
 - They will demonstrate their ability to analyze by
 - keeping a food journal for a day,
 - categorizing foods from their journals into the food groups on the MyPyramid for Kids poster, and
 - comparing their choices with recommended choices.
- 2. develop their ideas about being snack smart.
 - They will demonstrate their ability by
 - proposing a definition for snack smart,
 - analyzing their food journals for smart snacks, and
 - proposing a list of smart snacks for their school.
- **3.** build good consumer skills.

They will demonstrate these skills by finding and choosing smart snacks in a local convenience store.

4. develop an appreciation for their heritage and culture.

They will demonstrate their appreciation by listening to and learning from elders from the local community.



In Advance

Teacher Materials

tape

color copy of the *MyPyramid for Kids* poster on the TRCD
 Eagle Book: *Through the Eyes of the Eagle* (optional)
 copy of Copymaster 4.3, *The New Food Guide Pyramid*

Student Materials

For each student

6 crayons (1 each of orange, green, red, yellow, blue, purple)
blank sheets of paper
1 copy of Copymaster 4.1, *What I Ate and Drank during One Day*1 copy of Copymaster 4.2, *MyPyramid for Kids*1 copy of Copymaster 4.4, *Did I Make Good Choices*?

Preparation

Two days before this lesson, set the stage by telling students that for the next activity they will need to think about everything they eat during one day. Give each student a copy of Copymaster 4.1, *What I Ate and Drank during One Day*, and explain to students that on the next day they will need to write down everything they eat and drink. Explain to students that they do not need to fill in every blank. For example, if they didn't have a snack between breakfast and lunch, they should leave that box empty. This would include what they eat for each meal plus snacks and drinks. They should include anything they eat or drink at home, school, or other places. Tell students what day they will need to bring their completed record back to class.

Note to Teacher: Be aware of and sensitive to students who may not be eating well at home. Have students complete Copymaster 4.1 on a day when some meals are available at school.

Decide if you are going to take your class to a convenience store. Call ahead to inform the store manager of your plans; also secure transportation and permissions.

Process and Procedure

Part I: My Food Journal

- 1. Display the MyPyramid for Kids poster in the classroom.
- 2. Distribute Copymaster 4.2, *MyPyramid for Kids*. Have students tell you the six food groups on the pyramid. As students tell you the groups, write them on the

board (grains, vegetables, fruits, milk, meat and beans, and oils). Have students tell you the amount of food from each group that a person should eat every day. Review the main points of *MyPyramid for Kids*:

- Choose healthier foods from each group.
- Make choices that are right for you.
- Eat more from some food groups than others.
- Every color every day.
- Be physically active every day.
- Take one step at a time.

If students ate a meal prepared at the school, have them analyze the school menu for proper portions and balance of food groups and for snack foods offered within the school.

The size of the food groups' colored bands on *MyPyramid for Kids* indicates the relative amount of foods per day that we should eat. For example, we should eat more grains and vegetables than we eat meats and oils.

3. Ask students to get out their copies of Copymaster 4.1, *What I Ate and Drank during One Day*, which they filled in. Ask them if they think they made good, healthful choices about what they ate and drank during that day.

Students' responses will vary. Some may think they made good choices, some may say they didn't, and some may feel that they made some good and some not-so-good choices. Other students may not feel they know how to judge. The responses will help you gauge students' understanding of good choices at this point.

4. On the *MyPyramid for Kids* poster, point to the grains group. Ask for volunteers to name something off their food lists (Copymaster 4.1) that fits in the grains category. After several students have given examples, ask students to circle all the grains in their food lists using an orange crayon (to match the color on the pyramid).

Students will need your help with this task. They may think that only breakfast cereal should be circled. Call out other examples of grains such as bread, pasta, rice, and crackers. Students may have food items that belong to more than one food group, such as a sandwich. Have students circle the sandwich with a color for each food group that is represented.

5. Continue this process with your students until you have been through each food group. Students should use a different colored crayon for each of the groups (as indicated):

Examples for the remaining groups include the following:

- Vegetables (green): Lettuce, carrots, broccoli, celery
- Fruits (red): Bananas, apples, oranges, strawberries, grapes



- Milk (blue): Milk, yogurt, ice cream
- Meat and beans (purple): Chicken, lunch meat, beef, pork, beans, fish, nuts
- Oils (yellow): Mayonnaise (Circle fried items in yellow, too.)
- 6. Give each student a copy of Copymaster 4.4, *Did I Make Good Choices*? Ask students to count the number of each color (food group) they have in their food lists. Tell them to write that number in the "How many servings did I eat?" column of the table on the handout. Students can use the same colors to write their responses.

For example, if they circle four things in orange (for grains), they should write an orange "4" on their handout.

Note to Teacher: This is not a completely accurate way to determine the amounts of each food group that students are eating—it is only an approximation. This is just a starting place for students to begin to think about eating more or less of certain foods.

- 7. Review the number of servings that children should eat of the different food groups. Refer again to the *MyPyramid for Kids* poster. As you review the servings for each food group, ask students to write them in the appropriate columns on Copymaster 4.4.
- 8. Ask students to compare what they ate during their recording day with the number of servings recommended. Ask students to circle the choice that they think is most appropriate in the "What should I try to do in the future?" column on Copymaster 4.4.

For example, if a student ate 1 cup of vegetables during the day of recording his or her food intake, the appropriate choice would be "I should try to get more servings of vegetables."

Use this as a discussion starter to talk about which foods we should eat more of each day (grains and vegetables) and which foods we should eat less of (meats and beans and oils). Also, inform students that most people don't get the right number of servings for each food group every day. The goal should be to get the right number of servings on most days. If a person does not make the best choices on a given day, he or she should try to get back to making more healthful choices on the next day.

Part II: What about Those Snacks?

- Divide the class into groups of three or four students. Have them describe their individual definition of "snack smart" and come up with a team definition of snack smart based on their observations of all the members' definitions.
- Lead the class in a discussion about each team's definition of snack smart. They
 will then decide as a class which definition they think is best for snack smart.
 Write this definition on the board.
- **3.** Ask students to find all of the snacks on their food lists (Copymaster 4.1). Ask them to mark the snack items they ate by placing a large S beside each.
- **4.** Ask the students if they think it is possible to find a healthful snack at a convenience store.

Take students on a field trip to a convenience store. Give them five minutes to find one healthful snack and one healthful drink. (If a field trip is not possible, you can do an imaginary field trip to a convenience store or a grocery store in the classroom.) If your school has a number of vending machines, you could take your students there for a field trip.

5. Instruct students to record their snack choices in their food journals and describe their healthful snack choices to the class.

The other students in the class will vote on whether they agree that the choice is a healthful one.

6. Read students the following scenario. Then ask the students to propose their own list of smart snacks that the school can have available for students:

"Our school is planning to offer snacks for students, and they ask you and your friends to make a list of smart snacks to have available for students. Come up with a list of five healthful snacks based on what you learned about kinds of nutrients (sugar, fat, fiber), food groups, and portion sizes."

7. Have the students share their ideas with the whole class.

Students may also want to share their ideas with the principal or the parent and teacher association to have more healthful snacks available in school.

8. If possible, invite an elder from the community to discuss the eating habits of our ancestors, or read the Eagle Book *Through the Eyes of the Eagle*.

Remind students that for our ancestors, the daily intake was one to two meals per day, and food intake was based on the availability of wildlife, the number of people to feed, and food preservation methods. During times of abundance, snack items would have included wild turnips, blueberries, Juneberries, chokecherries, and rosebud petals.



LESSON 5 A CELEBRATION OF COMMUNITY DIVERSITY



Overview

In this Evaluate lesson, students have the opportunity to demonstrate what they have learned by planning, advertising, and conducting a celebration feast. This feast will feature healthful food choices and physical activity.

Enduring Understandings

Because this is the Evaluate activity, no new concepts are introduced.

Teacher Background

No additional information is needed for this lesson.

Outcomes and Indicators of Success

By the end of this lesson, students should be able to

- 1. demonstrate their understanding of healthful food choices.
 - They will demonstrate their understanding by
 - planning a menu for a feast and selecting healthful foods and
 - comparing their menu to the MyPyramid for Kids food choice recommendations.
- 2. apply advertising techniques to promote healthful foods.
 - They will demonstrate their ability by designing an advertisement or commercial for their

feast, highlighting healthful foods and physical activity.

3. communicate their understanding of good health to others.

They will demonstrate their ability to communicate by

- performing or describing their commercial or advertisement for their class,
- explaining their good food choices to guests of the celebration feast, and
- demonstrating the Round Dance as a physical activity to promote good health.

In Advance

Teacher Materials

Native American music on the TRCD Round Dance video on the TRCD CD player selection of food items determined by student teams (see *Preparation*)

Student Materials

For each team of 3-4 students

1 sheet of poster board or chart paper for advertisements markers



paper scissors old magazines 3–4 glue sticks

Preparation

Decide if you will have a traditional feast or whether a smaller party would fit better into the class schedule. If time is short, you could plan a healthful party. For example, if you are teaching this unit around Halloween or another holiday, the theme could be a healthful holiday party.

Talk with parents of students in your class and alert them of the upcoming celebration feast. Ask for volunteers to supply foods that the students select for the feast. (Also consider asking parent organizations to help with the supplies for the feast.) Have the parents mark their calendars and reserve the time to join the class in the celebration.

If students will be preparing an actual healthful feast (or party), you will need to find out about any food allergies or health issues that students may have so that students do not consume foods that cause them problems.

If students measure food portions in their hands, they should thoroughly wash their hands before handling the food.

Process and Procedure

Part I: Planning a Celebration Feast

 Discuss the concept of feast as a large social gathering and celebration with a specific theme, often including music, dance, and food related to that theme.

Ask students to "brainstorm" a list of possible festival themes. Discuss the concept of an ethnic festival as a social gathering among a variety of divergent cultural groups and a sharing of their diversity in terms of music and dance, for example, a Native American powwow and the Round Dance of Friendship.



- 2. Divide the class into teams of three or four students, depending on the size of the class. Ask groups to brainstorm ideas for creating a feast within their community. Each group will
 - determine the types of food and physical activity they will have at the feast;
 - conduct a search through the grocery store (or magazines) for examples of specific foods they want to include in the feast;
 - divide selected items into specific food groupings and evaluate whether they have planned a balanced meal and correct portions for the number of people who are coming;

- plan an actual feast for their class, grade, or school;
- invite local and school officials, parents, community members, contributors, and so forth to attend; and
- celebrate the diversity of their community and enjoy what they have created!

Note to Teacher: Allow plenty of time for students to plan this celebration. This is an opportunity for them to demonstrate what they have learned in Unit 2. You may want to divide the tasks among teams.

Part II: Get the Message Out

- Working in teams of three or four, encourage students to produce an ad or commercial that will make people interested in eating nutritious foods and taking part in physical activity as part of a balanced life.
- 2. Students can create a skit for a commercial or they can create an advertisement on paper by drawing or cutting out pictures and pasting them on the paper.
- Ask each team to present their advertisement or commercial to the class. Additionally, you may want students to present at the celebration so that guests can see what your students have learned.
- Ask students to discuss their advertisements with the class. Have students share what they have learned from others about being a smart consumer and recognizing tricks in advertising.

Part III: Let's Celebrate!

1. At the opening of the celebration feast, remind students to take time to show respect and thanks for the food and each other.

An important part of every meal is to take a moment before eating to give thanks for the food—showing appreciation for the food itself, for the labor of those who produced and prepared it, for the animals and plants that gave their lives to nourish us, and for the earth that gave us the gifts that made it all possible (water, soil, air, rain, nutrients).

The pleasure of good eating is about much more than the taste of the food it is about a deep appreciation for, and connection with, everything in life. It promotes good environmental stewardship in thinking about the whole food chain and protecting our resources so that we can enjoy wonderful, colorful, healthful, nutritious foods whose flavors delight our mouths.

2. Have your students play hosts for guests who attend the celebration. Have students share how they chose foods for the celebration. Additionally, have students demonstrate to the visitors how to easily measure the recommended







serving size using their hands (see Copymaster 3.1, Choose Sensible Sizes).

Students should be able to explain to the visitors why they think the chosen foods are healthful.

3. An important part of the celebration feast is dancing, and dancing is a good way to get physical activity to stay healthy while having fun.

Even for people who do not think they can dance, the Round Dance is easy and fun. Have the students practice a simple but fast Round Dance in preparation for the feast. Explain to students that Native Americans have used this dance for many years to celebrate friendship and unity among all people. It is also used to celebrate balance in life and health. Have the students hold hands with the person next to them and move one small step to the left (clockwise) when they hear the drumbeat. Then have the students let go of each other's hands. Increase the speed of the beat so that all students are dancing hard and moving all parts of their bodies to get moving and stay strong.

Consider inviting your guests to participate in the Round Dance.

Health Is Life in Balance

UNIT 2 COPYMASTERS

Copymaster 3.1, Choose Sensible Sizes Copymaster 3.2, Cereal and Cookie Labels Copymaster 3.3, Bread and Snack Labels Copymaster 4.1, What I Ate and Drank during One Day Copymaster 4.2, MyPyramid for Kids Copymaster 4.3, The New Food Guide Pyramid Copymaster 4.4, Did I Make Good Choices?



Choose Sensible Sizes

Amount of food	Types of food	Size of one serving (the same size as:)
3 ounces	meat, chicken, turkey, or fish	the palm of a hand
1 cup	cooked vegetables salads casseroles or stews, such as chili with beans milk	an average- sized fist
1/2 cup	fruit or fruit juice starchy vegetables, such as potatoes or corn pinto beans and other dried beans rice or noodles cereal	half of an average- sized fist
1 ounce	snack food	one handful
1 Tablespoon	salad dressing	the tip of a thumb
1 teaspoon	margarine	a fingertip

Note: The hand size shown is for adults, but the same proportion is valid for child-sized hands. However, the amount of food listed in the first column should be adjusted for children.





Sugar-Coated Flake Cereal

Serving Size 3/4 Cup Servings Per Packa	ge (3	About 18
Amount Por Serving	Coreal	Cereal with 1/2 Cup Vitamins A&D Fat Free Milk
Calories Calories from Fat	120 0	160
Calones from Fat	-	0 ally Value**
Total Fat 0g*	0%	0%
Saturated Fat 0g	0%	0%
Cholesterol Omg	0%	0%
Sodium 150mg	6%	9%
Potassium 20mg	1%	6%
Total Carbohydrate 2	8g 9%	11%
Dietary Fiber 1g	3%	3%
Sugars 12g		
Other Carbohydrat	e 15g	-
Protein 1g		
	0/.	Daily Value
Vitamin A	10%	15%
Vitamin C	10%	10%
Calcium	0%	15%
Iron	25%	25%
Vitamin D	10%	25%
Thiamin	25%	25%
Riboflavin	25%	35%
Niacin	25%	25%
Vitamin B _s	25%	25%
Folic Acid	25%	25%
Vitamin B ₁₂	25%	35%
	e half cur	o of fat free O claories,

Cereal Nutrition Facts

Toasted Oat

Serving Size 1 Cu Servings Per Contai		(30g) About 9
	Sector in	the state of the s
Amount Per Serving	Cereal	with 1/2 Cup Skim Milk
Calories Calories from Fat	110 15	150 20
	% Da	ally Value*
Total Fat 2g*	3%	3%
Saturated Fat 0g	0%	3%
Polyunsaturated Fa	at 0.5g	
Monounsaturated I	at 0.5g	
Cholesterol Omg	0%	1%
Sodium 280mg	12%	15%
Potassium 95mg	3%	9%
Total Carbohydrate 2	2g 7%	9%
Dietary Fiber 3g	11%	11%
Soluable Fiber 1g		
Sugars 1g		
Other Carbohydrat	e 18a	
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	%	Daily Value
Protein		
1 manual a		
Vitamin A	10%	15%
Vitamin A Vitamin C	10% 10%	
		10%
Vitamin C Calcium Iron	10%	10% 25%
Vitamin C Calcium Iron Vitamin D	10% 10% 45% 10%	10% 25% 45% 25%
Vitamin C Calcium Iron Vitamin D Thiamin	10% 10% 45% 10% 25%	10% 25% 45% 25% 30%
Vitamin C Calcium Iron Vitamin D Thiamin Riboflavin	10% 10% 45% 10% 25% 25%	10% 25% 45% 25% 30% 35%
Vitamin C Celcium Iron Vitamin D Thiamin Riboflavin Niacin	10% 10% 45% 10% 25% 25% 25%	10% 25% 45% 25% 30% 35% 25%
Vitamin C Calcium Iron Vitamin D Thiamin Riboflavin Niacin Vitamin B ₆	10% 10% 45% 10% 25% 25% 25%	15% 10% 25% 45% 25% 30% 35% 25%
Vitamin C Calcium Iron Vitamin D Thiamin Riboflavin Niacin Vitamin B ₆ Folic Acid	10% 10% 45% 25% 25% 25% 25% 50%	10% 25% 45% 25% 30% 35% 25% 25% 50%
Vitamin C Calcium Iron Vitamin D Thiamin Riboflavin Niacin Vitamin B ₆ Folic Acid Vitamin B ₁₂	10% 10% 45% 25% 25% 25% 25% 50% 25%	10% 25% 45% 25% 30% 35% 25% 25% 50% 35%
Vitamin C Calcium Iron Vitamin D Thiamin Riboflavin Niacin Vitamin B, Folic Acid Vitamin B, Phosphorus	10% 10% 45% 25% 25% 25% 25% 50% 25% 10%	10% 25% 45% 25% 30% 35% 25% 50% 35% 25%
Vitamin C Calcium Iron Vitamin D Thiamin Riboflavin Niacin Vitamin B ₆ Follo Acid Vitamin B ₁ , Phosphorus Magnesium	10% 10% 45% 25% 25% 25% 25% 50% 25% 10%	10% 25% 45% 25% 30% 35% 25% 50% 35% 25% 10%
Vitamin C Calcium Iron Vitamin D Thiamin Ribofiavin Niacin Vitamin B ₆ Folic Acid Vitamin B ₁₂ Phosphorus	10% 10% 45% 25% 25% 25% 25% 50% 25% 10%	10% 25% 45% 25% 30% 35% 25% 50% 35% 25%

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Copymaster 3.2 Grades 3–4 Unit 2, Lesson 3 Cereal and Cookie Labels



Creme-Filled Sandwich Cookie

Nutriti	ion I	Fact	S
Serving Size Servings Per	3 cookie Contain	s (34g) er about	15
			ton make
Amount Per Se			
Calories 160	Cal	ories from	- Martin State
		% Dai	ly Value*
Total Fat 7g			11%
Saturated F	the second day is not the owner.		7%
Cholesterol			0%
Sodium 210r			9%
Total Carboh	ydrate 2	24g	8%
Dietary Fibe	r 1g		4%
Sugars 13g			
Protein 2g			
Lunio - Tombe -		-	
Vitamin A 0%		Vitam	in C 0%
Calcium 0%			Iron 8%
*Percent Daily V calorie diet. You or lower depend	r daily va	lues may b	be higher
	Calories	: 2,000	2,500
Total Fat Sat Fat Cholesterol Sodium Total Carbohyd Dietary Fiber	Less than		80 g 25 g 300 mg 2,400 mg 375 g 30 g
INGREDIENT FLOUR (WHE DUCED IRON, {VITAMIN B1}, FOLIC ACID)	S: SUG	UR, NIAC	NITRATE

Graham Crackers

Nutritic	n l	Fact	s
Serving Size 8 (1 serving = 2 fr Servings Per Co	ull cra	cker she	ets)
Martin Contraction of the State	and	121-1	1
Amount Per Serv	ing		
Calories 130	Cal	ories from	n Fat 25
		% Da	ily Value*
Total Fat 3g			5%
Saturated Fat	0.5g		3%
Polyunsaturate	ed Fat	Og	
Monounsatura	ted Fa	at 1g	
Cholesterol On			0%
Sodium 190mg	1		8%
Total Carbohyo		24g	8%
Dietary Fiber 1	-		5%
Sugars 7g	-		
Protein 2g			
In the second second	allow and		- Contractor
Vitamin A 0%		Vitan	nin C 0%
Calcium 2%			Iron 6%
*Percent Daily Val calorie diet. Your o or lower dependin	taily va	lues may	be higher
C	alories	: 2,000	2,500
Sat Fat Li Cholesterol Li	ess that	n 20 g n 300 mg	80 g 25 g 300 mg 2,400 mg 375 g 30 g
INGREDIENTS: (WHEAT FLOUR, THIAMINE MONO RIBOFLAVIN (VII GRAHAM FLOUR DROGENATED SO PRESERVED W HIGH FRUCTOSE ING (BAKING S PHATE), SALT, M	NIACIN DNITR/ AMIN , SUG/ DYBEA ITH S CORM	I, REDUC ATE (VITA B2}, FOL AR, PART NOIL, MO ULFUR I NSYRUP, CALCIUI	MIN B1), IC ACID), IALLY HY- DLASSES DIOXIDE, LEAVEN- M PHOS-

page 2 of 2



Copymaster 3.2 Grades 3–4 Unit 2, Lesson 3 Cereal and Cookie Labels



White Bread

Nutrition Facts Serving Size 1 slice (34g) Servings Per Container 18 Amount Per Serving Calories 90 Calories from Fat 15 "Daily Value" Total Fat 1.5g 2% 0% Saturated Fat 0g Trans Fat Og 0% Cholesterol Omg 0% Sodium 140 mg 6% Total Carbohydrate 16 g 5% Dietary Fiber 1g 0% Sugars 2g Protein 29 Vitemin C 0% Vitamin A 0% . 4% Iron 6% Calcium . * Porcant Delly Values are beaud on a 2,000 calorio det.

Ingredients: Enriched wheat flour (wheat flour, barley malt, niacin, iron, thiamine, mononitrate, riboflavin, folic acid), whey, high fructose corm syrup...

Whole-Wheat Bread

Amount Par Serving	
Calories 90 Calories I	rom Fat 10
	SOally Value"
Total Fat 19	2%
Saturated Fat 0g	0%
Trans Fat 0g	0%
Choiesterol Orng	0%
Sodium 190 mg	8%
Total Carbohydrate 18	9 6%
Dietary Fiber 3g	12%
Sugars 3g	
Protein 4g	
Vitamin A 0% • Vita	min C 0%
Calcium 4% - Iron	6%

Ingredients:

Whole-wheat flour, water, brown sugar, wheat gluten, soybean oil, wheat bran, yeast, sait, wheat germ, molasses, honey...

Regular Potato Chips

Nutrition Fac Serving Size 30g (about 20 Servings Per Container 8	
Amawest Per Serving Calories 160 Calories In	orn Eat 100
Contraction of the local division of the loc	ly Value
Total Fat 110	17%
Saturatini Fat Og	18%

Baked Potato Chips

Nutrition Fa	about 10 chips)
Amount Per Serving	
Calories 120 Calorie	s from Fat 30
961	Daily Value'
Total Fat 3g	5%
Saturated Fat 0g	0%

Minipretzel Twists

Nutrition Fac Serving Size 22 pieces (28 Servings Per Container Ab	(g)
Amount Per Serving	
Calories 110 Calones In	om Fat 10
%Dal	ly Value'
Total Fat to	125
Saturated Fat Dg	0°.,





What I Ate and Drank during One Day

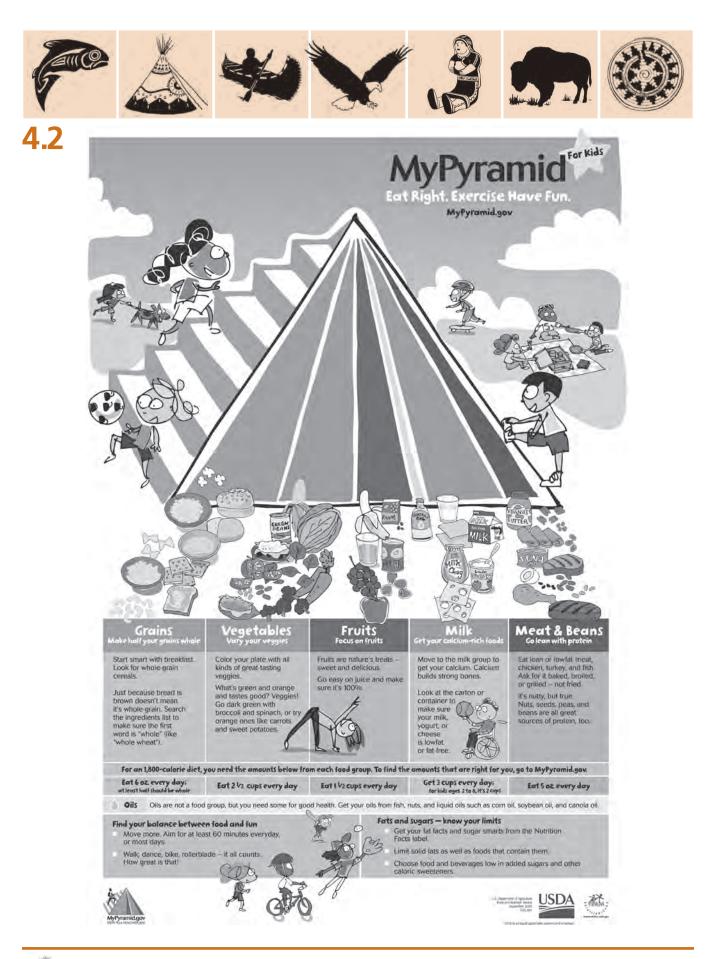
Name ____

Day_

Directions: Write down everything you eat or drink (including water) during the day. It will be easiest if you write things down right after you eat or drink them. Include meals and snacks.

Meal or Snack	What I Ate and Drank
Breakfast	
Snack	
Lunch	
Snack	
Dinner	
Snack	





Community, Prevention, Lifestyle, Education Diabetes Education in Tribal Schools Health Is Life in Balance



The New Food Guide Pyramid

The Food Guide Pyramid is one way for people to understand how to eat healthy. A rainbow of colored, vertical stripes represents the five food groups plus fats and oils. Here's what the colors stand for:

- orange grains
- green vegetables
- red fruits
- yellow fats and oils
- blue milk and dairy products
- purple meat, beans, fish, and nuts

The U.S. Department of Agriculture (USDA) changed the pyramid in 2005 because they wanted to do a better job of telling Americans how to be healthy. The agency later released a special version for kids. Notice the girl climbing the staircase up the side of the pyramid? That's a way of showing kids how important it is to exercise and be active every day. In other words, play a lot! The steps are also a way of saying that you can make changes little by little to be healthier. One step at a time, get it?



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The Pyramid Speaks

Let's look at some of the other messages this new symbol is trying to send:

Eat a variety of foods. A balanced diet is one that includes all the food groups. In other words, have foods from every color, every day.

Eat less of some foods, and more of others. You can see that the bands for meat and protein (purple) and oils (yellow) are skinnier than the others. That's because you need less of those kinds of foods than you do of fruits, vegetables, grains, and dairy foods.

You also can see the bands start out wider and get thinner as they approach the top. That's designed to show you that not all foods are created equal, even within a healthy food group like fruit. For instance, apple pie would be in that thin part of the fruit band because it has a lot of added sugar and fat. A whole apple — crunch! — would be down in the wide part because you can eat more of those within a healthy diet.

Make it personal. Through the USDA's MyPyramid website, people can get personalized recommendations about the mix of foods they need to eat and how much they should be eating. There is a kids' version of the website available too.



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How Much Do I Need to Eat?

Everyone wants to know how much they should eat to stay healthy. It's a tricky question, though. It depends on your age, whether you're a girl or a boy, and how active you are. Kids who are more active burn more calories, so they need more calories. But we can give you some estimates for how much you need of each food group.

Grains

Grains are measured out in ounce equivalents. What the heck are they? Ounce equivalents are just another way of showing a serving size.

Here are ounce equivalents for common grain foods. An ounce equivalent equals:

- l slice of bread
- 1/2 cup of cooked cereal, like oatmeal
- ¹/₂ cup of rice or pasta
- l cup of cold cereal
- * 4- to 8-year-olds need 4-5 ounce equivalents each day.
- * 9- to 13-year-old girls need 5 ounce equivalents each day.
- * 9- to 13-year-old boys need 6 ounce equivalents each day.

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And one last thing about grains: Try make at least half of your grain servings whole grains, such as 100% whole-wheat bread, brown rice, and oatmeal.

Vegetables

Of course, you need your vegetables, especially those dark green and orange ones. But how much is enough? Vegetable servings are measured in cups.

- * 4- to 8-year-olds need $1\frac{1}{2}$ cups of veggies each day.
- * 9- to 13-year-old girls need 2 cups of veggies each day.
- * 9- to 13-year-old boys need 2½ cups of veggies each day.

Fruits

Sweet, juicy fruit is definitely part of a healthy diet. Here's how much you need:

- * 4- to 8-year-olds need $1-1\frac{1}{2}$ cups of fruit each day.
- $\ast\,$ 9- to 13-year-olds need 1½ cups of fruit each day.

Milk and Other Calcium-Rich Foods

Calcium builds strong bones to last a lifetime, so you need these foods in your diet.

- * 4- to 8-year-olds need 2 cups of milk (or another calcium-rich food) each day.
- * 9- to 13-year-olds need 3 cups of milk (or another calcium-rich food) each day.

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If you want something other than milk, you can substitute yogurt, cheese, or calcium-fortified orange juice—just to name a few.

Meats, Beans, Fish, and Nuts

These foods contain iron and lots of other important nutrients.

Like grains, these foods are measured in ounce equivalents.

An ounce equivalent of this group would be:

- l ounce of meat, poultry, or fish
- ¼ cup cooked dry beans
- legg
- 1 tablespoon of peanut butter
- 1/2 ounce (about a small handful) of nuts or seeds
- * 4- to 8-year-olds need 3-4 ounce equivalents each day.
- * 9- to 13-year-olds need 5 ounce equivalents each day.

Whoa! That's a lot to swallow. The good news is that your mom, dad, and the other grown-ups in your life will help you eat what you need to stay healthy. There's more good news — you don't have to become a perfect eater overnight. Just remember those stairs climbing up the side of the new pyramid and take it one step at a time.

Source: This information was provided by KidsHealth, one of the largest resources online for medically reviewed health information written for parents, kids, and teens. For more articles like this one, visit www.KidsHealth.org or www.TeensHealth.org. ©1995-2008. The Nemours Foundation

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Did I Make Good Choices?

Food Group	How Many Servings Did I Eat?	How Many Servings Should I Eat during a Day?	What Should I Try to Do in the Future? (Circle one choice for each food group.)
Grains			I should try to eat the same number of servings. I should try to eat more servings of grains. I should try to eat fewer servings of grains.
Vegetables			I should try to eat the same number of servings. I should try to eat more servings of vegetables. I should try to eat fewer servings of vegetables.
Fruits			I should try to eat the same number of servings. I should try to eat more servings of fruits. I should try to eat fewer servings of fruits.
Milk			I should try to eat the same number of servings. I should try to eat more servings of milk. I should try to eat fewer servings of milk.
Meat and beans			I should try to eat the same number of servings. I should try to eat more servings of meat and beans. I should try to eat fewer servings of meat and beans.
Oils			I should try to eat the same number of servings. I should try to eat more servings of oils. I should try to eat fewer servings of oils.





Health Is Life in Balance

Grades 3–4 UNIT 3: EXPLORING DIGESTION AND DIABETES





Unit 3 Overview

DETS Grades 3–4 Unit 3, *Exploring Digestion and Diabetes*, consists of six lessons that will take nine or 10 class sessions of 30–50 minutes. Students discuss why we eat, and they explore the digestive process. They further explore how the body uses the foods they eat. Students role-play how a healthy body and one with diabetes use glucose in the blood. Finally, students script and perform a puppet show to communicate their understanding of the concepts of the unit.



Unit 3 Correlation with National Standards

National Science Education Standards

In today's classroom, it is important that curriculum materials help teachers address the standards that have been set for various subject areas. The content of this curriculum unit ties directly to the National Research Council's 1996 *National Science Education Standards*. The following chart indicates which standards are addressed by the different lessons within Unit 3.

Content Standards: Grades K-4

Content Standard A: As a result of activities in grades K–4, all students should develop	Correlation with the DETS 3–4 Unit 3
Abilities necessary to do scientific inquiry	
Employ simple equipment and tools to gather data and extend the senses.	Lessons 1, 3, 5
Use data to construct a reasonable explanation.	Lesson 3
Content Standard C: As a result of activities in grades K–4, all students should develop understanding of	
The characteristics of organisms	
Organisms have basic needs. For example, animals need air, water, and food.	Lesson 1
Content Standard F: As a result of activities in grades K–4, all students should develop understanding of	
Personal health	
Nutrition is essential to health. Students should understand how the body uses food and how various foods contribute to health. Recommendations for good nutrition include eating a variety of foods, eating less sugar, and eating less fat.	Lessons 1, 2, 4, 5

Source: Reprinted with permission from National Science Education Standards. © 1996 by the National Academy of Sciences, National Academies Press, Washington, D.C.



The National Health Education Standards

The content of this unit also meets several of the *National Health Education Standards*, as outlined in the following chart.

This unit also addresses standards in the areas of language arts, math, and social

studies. See *Appendix A* for information about the correlation of the unit's lessons to these other standards.

Standards and Performance Indicators: Grades 3–5

Standard Number	National Health Education Standard	Correlation to the DETS 3–4 Unit 3
1	Students will comprehend concepts related to health promotion and disease prevention to enhance health.	
As a result of health instruction in grades 3 through 5, students will		
1.5.1	Describe the relationship between healthy behaviors and personal health.	Lessons 1, 4, 5
4	Students will demonstrate the ability to use interpersonal communication skills to enhance health and avoid or reduce health risks.	
As a result of health instruction in grades 3 through 5, students will		
4.5.1	Demonstrate effective verbal and nonverbal communication skills to enhance health.	Lesson 5
5	Students will demonstrate the ability to use decision-making skills to enhance health.	
As a result of health instruction in grades 3 through 5, students will		
5.5.1	Identify health-related situations that might require a thoughtful decision	Lesson 4
5.5.3	List healthy options to health-related issues or problems.	Lesson 5
5.5.6	Describe the outcomes of a health-related decision.	Lesson 5
7	Students will demonstrate the ability to practice health-enhancing behaviors and avoid or reduce health risks.	
As a result of health instruction in grades 3 through 5, students will		
7.5.1	Identify responsible personal health behaviors.	Lesson 4
8	Students will demonstrate the ability to advocate for personal, family, and community health.	
As a result of health instruction in grades 3 through 5, students will		
8.5.1	Express opinions and give accurate information about health issues.	Lesson 5
purce: Reprinted with permission from the American Cancer Society. National health education standards: Achieving excellence (2nd ed.). Atlanta: GA: American Cancer		

Source: Reprinted with permission, from the American Cancer Society. National health education standards: Achieving excellence (2nd ed.). Atlanta, GA: American Cancer Society. 2007, www.cancer.org/bookstore.

Teacher Strategies for Unit 3

Timeline for the Lessons

The timeline provides a guideline for completing the six lessons in Unit 3. You will need nine to 10 class sessions ranging from 30 to 50 minutes long. The actual amount of class time needed for the unit will reflect the practice of individual teachers. Some classes will spend more time on activities and discussions than others. Depending on the amount of time available, you may need to complete lessons over multiple days.

Lesson 1, Why Do We Eat Food?: 30 minutes

Lesson 2, Breaking It Down: 50 minutes

Lesson 3, Visible and Invisible Sugar: 50 minutes

Lesson 4, Nutrients from Food: 30-40 minutes

Lesson 5, A Role Play of Health and Diabetes: 50 minutes

Lesson 6, Passing on the Message of Good Health: 4-5 50-minute classes

The timeline assumes that you will teach the lessons on consecutive days. If several days separate the lessons, you may need additional time to review the previous lessons. This review will help students make stronger connections between the lessons.

Advance Preparation

2 Weeks Ahead

Begin reviewing lessons.

1 Week Ahead

Make photocopies and transparencies.

Gather necessary materials.

Cut apart copies of Copymaster 5.1, *Glucose Cards*, so that you have 24–30 separate cards ready for Lesson 5. You can laminate the cards to make them last longer, if desired.

Locate supplies for the puppet stage for Lesson 6. A large kitchen-appliance box will work.

Ask students to bring in old socks to use for the puppets in Lesson 6.

Arrange for an audience for the puppet shows. This can be another class—preferably one that is not using this curriculum. If it is not possible to arrange for another class to attend, students can perform their puppet shows for other teams in their class. Consider inviting parents, school personnel, and community members.

Teacher Materials for the Unit

several batteries of several different sizes, including some that are dead 1 slice of bread



paper clips (optional) envelopes (optional) 1 large, clear cup or bowl 1 clear container water sugar plastic spoons small cups or dishes (paper or plastic) to hold samples of different types of sugar chart paper, whiteboard, or chalkboard markers 6-8 shoe boxes with lids tape stage setup for the puppet show (A large kitchen-appliance box will work.) The Maple Syrup Story: Wanaboosho and the Maple Trees on the TRCD (optional) Max Swift on the TRCD (optional) 3-4 copies of Copymaster 2.1, Digestion Cards 8-10 copies of Copymaster 4.1, Food Flowchart Cards 4-5 copies of Copymaster 5.1, Glucose Cards

Student Materials for the Unit

For each student

small paper plate
 hand lens
 dropper
 clean cotton swab
 sheet of 11 × 17-inch blank paper
 glue stick
 copy of Copymaster 3.1, *Sugar Observation Guide* set of cards from Copymaster 4.1, *Food Flowchart Cards* copy of Copymaster 5.2, *Blood and Glucose Model*

For each team of 2–3 students

several battery-operated devices such as flashlights, small fans, or toys (with the batteries removed)

For each team of 3–4 students

computer with access to the Web

1 set of cards from Copymaster 2.1, Digestion Cards

1 cup containing 2 tablespoons of table sugar, with spoon

cup containing 2 tablespoons of brown sugar, with spoon
 cup containing 2 tablespoons of powdered sugar, with spoon
 sugar water sample
 old socks for each character in the puppet show
 markers, yarn, and colored paper for decorating the puppets

Vocabulary List

carbohydrate: Carbohydrates come from foods and are the main source of energy that our bodies use.

diabetes: Diabetes is a disease that happens when the body does not use sugar (glucose) in the right way.

digestion: Digestion is the process that the body uses to break down food.

digestive system: The digestive system breaks down the food we eat into particles that are small enough for our bodies to use.

fat: Fats are from foods, and they carry some vitamins through our bodies.

glucose: Glucose is a kind of sugar in the blood and is the main source of energy for the body.

protein: Proteins are from foods and are used to make strong muscles and heal wounds.

Monitoring Students' Progress

Assessing what students have learned during an activity, lesson, or unit is an important part of your role as a teacher. Because assessment can play a different role at different times, Unit 3 has a variety of assessment strategies built in to the procedures.

The Engage lessons often include a mechanism for learning more about the preconceptions that students have before new content material is presented. From research on learning, we know that it is important for students to recall and think about their current knowledge and ideas. Some of this information is likely to be accurate and correct, but often this opportunity enables students to consider what they know, what questions they have, and even what discrepancies they have in their knowledge. Only after considering their prior knowledge will they be ready to add new information or revise incorrect ideas.

Assessment is also important as students progress through the lessons in the unit. In this unit, an icon in the margin denotes an opportunity for assessment. The icon indicates stages at which you can assess students' understanding of the enduring understandings or major concepts the lesson is designed to convey. Specific strategies for evaluating students' understanding are provided with the icon. Some of the strategies are informal and quick, while others may be more in depth. On the basis of students' understanding at these points, you can modify your teaching practices accordingly.





The Evaluate lesson in the unit provides an opportunity for students to synthesize what they have learned during the previous lessons. By completing the Evaluate lesson, students demonstrate what they have learned and apply their understanding to new situations.

Finally, some teachers may wish to use an end-of-the-unit quiz to assess students' understanding of the ideas and concepts. The accompanying Teacher Resource CD (TRCD) includes a short test bank of questions that can be used for this purpose. The questions are in a variety of formats—multiple choice, true-false, short answer, and problem solving. As you design your end-of-unit quiz, select the questions from the test bank that represent the concepts you focused on and that align with the way you taught the unit.

Health Is Life in Balance

UNIT 3 Exploring Digestion and Diabetes Student Lessons









Overview

Unit 3 begins with a lesson aimed at connecting a real-life experience (using a batteryoperated device) with our bodies. In Lesson 1, *Why Do We Eat Food?*, students engage in an activity that starts them thinking about why we need food. They make the connection by relating this need in our bodies to the need of some devices, a flashlight, for example, for a battery.

Enduring Understandings

Our bodies need food for energy.

Teacher Background

Some devices we use every day use a battery for their energy source. In order to work properly, the devices must have batteries that are charged, are the correct size and number, and are the proper type. Likewise, our bodies need food in the proper amounts, types, and variety to be the healthiest we can be. To be our healthiest and to lower our risk of diabetes, we must get our energy from a variety of foods eaten in the right amounts. Too much energy from food intake can lead to obesity and a greater risk of diabetes.

Outcomes and Indicators of Success

By the end of this lesson, the students should be able to

1. recognize that our bodies need energy to work properly.

They will demonstrate their recognition by participating in a discussion about why our bodies need food.

2. compare our bodies' need for food with a model of a battery-operated device.

They will demonstrate their ability by

- engaging with battery-operated devices that do not work properly;
- realizing that the battery-operated devices must have batteries in the proper size, number, and type to work properly; and
- comparing our bodies' need for energy with the battery-operated devices.

In Advance

Teacher Materials

several batteries of several different sizes, including some that are dead

Student Materials

For each team of 2-3 students

several battery-operated devices such as flashlights, small fans, or toys (with the batteries removed)

Lesson 1: Why Do We Eat Food? Engage



Process and Procedure

 Arrange the class into teams of two or three students. Hand out flashlights, small fans, battery-operated toys, and such to each team of students. Ask the students to turn on the device.

Students will struggle to get the device to work, but let them work with it long enough so that someone mentions or notices that they do not have batteries.

2. Tell students that you have some batteries for their devices. Give some teams working batteries, while other teams receive dead batteries, batteries of the wrong size, or too few batteries for the device.

Have the students try the batteries with their devices. Some of the devices will now work, but others will not. Ask the students to tell you why the devices still will not work.

3. Ask students, "Do our bodies have anything in common with the flashlight or toys you have been looking at?"

Depending on the items you selected for the activity, responses will vary. The purpose of this question is to get students to make connections between the batteryoperated device's need for energy and the body's need for energy.

4. Continue the discussion with students by asking the question, "Why do we eat?" Students should conclude that we eat because we need things in the food to be healthy and have energy, to get important nutrients like vitamins into our bodies, and because we are hungry.

5. Ask students to think of ways that a battery is like food.

If they struggle with this, ask them to think of a flashlight as being like our bodies. Then ask questions such as these:

- "What does a flashlight need to work?"
- "What do our bodies need to work?"
- "Do all foods work the same to give us energy and the ability to grow?"

Just as a flashlight needs the energy provided by batteries to work, our bodies need the energy that we get from food. If a battery-operated device has the wrong batteries, dead batteries, or not enough batteries, it either does not work or may not work correctly. Our bodies function best if we give them the right kind of food.





Overview

Once the students have seen that our bodies need food for energy, they continue their learning by exploring the process that the body uses to break down food. In Lesson 2 *Breaking It Down*, students explore the need for the body to break down the food for energy, and they learn the basic process of digestion. This lesson is not an in-depth look at digestion nor is it a lesson to memorize all the steps and organs involved in digestion. Rather, it is a look at the process and need for food to be broken down before the body uses it for energy.

Enduring Understandings

- Food must be broken down before the body can use it for energy.
- Digestion is the process that the body uses to break down food.

Teacher Background

The digestive system is a group of organs that break down food into small molecules. In this way, the molecules can be absorbed into the blood and transported by the circulatory system to all the cells of the body. The process begins with a mechanical breakdown in the mouth and continues in the various parts of the digestive tract. Most of the chemical breakdown occurs in the upper part of the small intestine in the presence of specific digestive enzymes. The end products of digestion are absorbed from the small intestine and delivered to the cells by the blood and lymph. Inside the cell, the food molecules may be stored, used to produce energy, or used to make other necessary molecules.

Outcomes and Indicators of Success

By the end of this lesson, students should be able to

1. begin to understand how the nutrients from food get to all parts of the body.

- They will demonstrate their ability by
- participating in a class discussion about how the nutrients in a slice of bread get to all parts of the body,
- sequencing cards about different steps in the digestion process, and
- reviewing a Web site for information on the steps of digestion.
- 2. develop the skills necessary to do inquiry.
 - They will demonstrate their ability by
 - predicting the steps of digestion by sequencing a set of cards,
 - defending their ideas to the class,
 - reviewing additional information from a Web site, and
 - revising their ideas based on new information.



In Advance

Teacher Materials

1 slice of bread paper clips (optional) envelopes (optional) 3–4 copies of Copymaster 2.1, *Digestion Cards*

Student Materials

For each team of 3–4 studentscomputer with access to the Web1 set of cards from Copymaster 2.1, Digestion Cards

Preparation

Cut apart copies of Copymaster 2.1, *Digestion Cards*, to form a set of seven cards. Place each set in an envelope or paper-clip them together. Each team will need one set.

Arrange for students to use computers to access the Web. If computers are not available, print copies of the information from the My Body: Digesting Food Web site, http://www.kidcyber.com.au/topics/bodydigest.htm for students to read.

Process and Procedure

 Begin this lesson by walking around the class looking and acting very tired. Act out this scenario with a lot of flare for your students. You should pretend that it is hard to move your arms and legs. Say, "I was running late for school today and I didn't eat breakfast [if this class is after lunch, make a similar comment about lunch]. I am so tired and I don't have any energy. I feel like those flashlights in the first activity that did not work. Can you help me decide what to do?"

Students may say you should sit down and rest, but some may mention that you need to eat something.

2. Make the comment, "But it is my arms and legs that feel so tired. How can putting food in my mouth help my arms and legs? Can't I just put a piece of bread or something on my arm?" [Place a slice of bread on your arm.]

Your students will think you are silly, but this brings home an important point: the food we eat must be broken down to supply energy to all parts of our body.

- **3.** Divide the class into teams of three or four students. Ask students, "What do our bodies need to do to use food such as a slice of bread?"
- 4. Lead your students in a discussion of how they think food gets broken down. Their ideas will likely center on chewing, mixing with saliva, and swallowing. Tell

them that the breakdown continues in our bodies. Our bodies break down food into very tiny particles.

- 5. Give students time to discuss these ideas within their teams. After you have given them a few minutes, ask each of the teams to share their ideas.
- 6. Give each team a set of the cards you cut from Copymaster 2.1, *Digestion Cards*. Tell students they are going to work together to put the seven steps in order to show how food is broken down in the body.

Tell the teams to think about what happens to food when they eat it. Students should place the cards in the order they think is correct for food as it goes through the body.

7. After teams have completed their sequencing, go around the room and have teams share their ideas. Have teams explain or defend their ideas. Ask if some teams have a different sequence, and then have those teams share. Ask students why they think the order is the way they have it.

Encourage students to defend their ideas with reasoning.

8. Have teams work at a computer station to view the *My Body: Digesting Food* Web site, http://www.kidcyber.com.au/topics/bodydigest.htm. Explain to students that they should use the information on the Web site to find out if their cards are in the correct order.

Tell students that scientists often improve their ideas when they get additional information. Allow students to improve their sequencing based on the information they learn from the Web site.

9. Ask teams to read the different steps from their sequence cards. Take turns until all the teams have had time to share.

Note to Teacher: The steps of the digestive system are not the main emphasis of this unit. Do not expect your students to memorize these steps. The point is for students to understand that food must be broken down for our bodies to use it for energy.

- 10. Ask students to tell you the word for the process the body uses to break down food. Write the word "digestion" on the board along with the definition: "Digestion is the process that the body uses to break down food."
- 11. Wrap up the lesson by telling students that the process of digestion takes the food we eat and breaks it down into very small particles that our bodies can use for energy. Ask students if they recall the word "glucose" from previous units. Allow students to tell you what they know about glucose.

Students who have been through the previous units will know that glucose is a special type of sugar that the body uses for energy. Tell students that glucose is one of the things that the body gets from digested food. Tell them that they will learn more about glucose in the next lessons.





Lesson 3 Visible and Invisible Sugar



Overview

In Lesson 3, *Visible and Invisible Sugar*, students explore various forms of sugar. They make observations about the texture and size of individual particles of the sugar by using a hand lens. Then students take part in a discussion about various uses of the different types of sugar. This leads them to see that each type of sugar can have a different use—even glucose—which they learned previously is a type of sugar that is in the blood. Students then consider a drop of sugar water and once again observe with a hand lens and predict what they think the substance is. Using their sense of taste, the students test their predictions. They learn through this process that some particles of sugar can be so small that we cannot see them, even with tools such as a hand lens. Glucose in the blood is similar to this—particles that are too small to see.

Enduring Understandings

- Sugars are different and have different uses.
- Glucose is a special type of sugar in the blood.
- Digestion breaks down food into particles that are too small to see.

Teacher Background

Sugar is the naturally occurring nutrient that makes food taste sweet. Sugars and starches are carbohydrates and are our main source of energy. Starch-rich foods include bread, rice, pasta, and potatoes, whereas sugars are found in fruits and vegetables, honey, jam, and many soft drinks.

Sugar (sucrose) is usually extracted from the juice of the beet or the cane plant, and a strong-tasting black syrup (known as molasses) remains. When white sugar is made, the molasses is entirely removed, whereas brown sugars retain varying amounts of this natural syrup. More molasses in brown sugar causes the crystals to be stickier, the color to be darker, and the flavor to be stronger.

Most of the carbohydrates we eat are starches or sugars. There are many different types of sugar, including glucose (also known as dextrose), fructose, sucrose (table sugar), lactose (milk sugar), and maltose. Starch is made up of long, branched chains of glucose units.

Sugars are a type of carbohydrate made by plants. Plants contain varying amounts of different sugars, for example, glucose, fructose, and sucrose. Sucrose is made up of glucose and fructose. It is the most abundant sugar in plants. Sugar beet (a vegetable) and sugarcane (a grass) naturally contain particularly large amounts of sucrose.

Carbohydrates are classified as simple or complex. The classification depends on the chemical structure of the particular food source and reflects how quickly the sugar is



digested and absorbed. Simple carbohydrates have one (single) or two (double) sugars while complex carbohydrates have three or more.

Complex carbohydrates, often referred to as "starchy" foods, include whole grain breads and cereals, starchy vegetables, and legumes.

Simple carbohydrates that contain vitamins and minerals occur naturally in fruits, milk, milk products, and vegetables. Simple carbohydrates are also found in processed and refined sugars such as candy, table sugar, syrups (not including natural syrups such as maple), regular (non-diet) carbonated beverages.

Refined sugars provide Calories, but lack vitamins, minerals, and fiber. Such simple sugars are often called "empty Calories" and can lead to weight gain. Also, many refined foods, such as white flour, sugar, and polished rice, lack B vitamins and other important nutrients unless they are marked "enriched."

It is healthiest to obtain carbohydrates, vitamins, and other nutrients in as natural a form as possible. For example, fruits are a more healthful source of carbohydrates than foods containing white sugar.

Outcomes and Indicators of Success

By the end of this lesson, students should be able to

1. use their observation skills to compare different types of sugar.

They will demonstrate their ability by

- using hand lenses to make observations of three different types of sugar,
- recording their observations on paper,
- illustrating their observations on paper, and
- discussing their observations with their team and class.
- 2. develop their skills of inquiry.

They will demonstrate their ability by

- making observations of a substance,
- predicting the identity of the substance,
- testing the prediction with their sense of taste, and
- refining the prediction after their tests.
- **3.** begin to understand that our sense of sight is not adequate for all observations.

They will demonstrate their understanding by making observations of sugar water to determine that the substance contains sugar even though it is not visible.

In Advance

Teacher Materials

1 large, clear cup or bowl

1 clear container water sugar plastic spoons small cups or dishes (paper or plastic) to hold samples of different types of sugar (paper or plastic; see *Preparation*) chart paper markers for chart paper *The Maple Syrup Story: Wanaboosho and the Maple Trees* on the TRCD (optional)

Note to Teacher: Students will taste the sugar water, so it is very important that the container, sugar, water, spoon, and cotton swabs are clean. Also, make sure the desks or tables where students will work are clean.

Student Materials

For each student

1 small paper plate

1 hand lens

1 dropper

1 clean cotton swab

1 copy of Copymaster 3.1, Sugar Observation Guide

For each team of 3-4 students

1 cup containing 2 tablespoons of table sugar, with spoon

1 cup containing 2 tablespoons of brown sugar, with spoon

1 cup containing 2 tablespoons of powdered sugar, with spoon

1 sugar water sample

Preparation

Prepare containers (cups or small bowls) of the different types of sugar for each team. Each team will need cups containing white table sugar, brown sugar, and powdered sugar approximately 2 tablespoons of sugar in each container. Place a plastic spoon in each container as you distribute the samples to teams.

Prepare a solution of sugar water by dissolving approximately 4 tablespoons of white sugar in 2 cups of water. Stir to dissolve. Place a small amount of the sugar water in small cups for each team to use. Save the rest for students to taste.



Process and Procedure

- Divide the class into teams of three to four students. Set out small samples of table sugar, brown sugar, and powdered sugar at each team's table. Give each student a small paper plate and a hand lens.
- 2. Tell students to place a small amount of each type of sugar on their plates (in separate piles) and observe them with their hand lenses.
- **3.** Have students draw pictures of what they see on Copymaster 3.1, *Sugar Observation Guide*. Ask them to write a sentence describing each type of sugar on the same handout.
- **4.** Ask your students to describe the sugars by giving some similarities and some differences between the sugars. Write their ideas on chart paper or the board.
- 5. Lead a class discussion about the different types of sugar and their different uses. Ask students if they know how each of these sugars is used, what different things they are used in, and so on. Allow students to share their experiences with each of these sugars.

Note to Teacher: It is important to emphasize that the table, brown, and powdered sugars are only a few of the different kinds of sugar. Consider sharing The Maple Syrup Story: Wanaboosho and the Maple Trees at this time to represent another type of sugar as well as to emphasize Native American culture. This story can be found on the TRCD.

- 6. Remind students of what they learned in Units 1 and 2 about a special type of sugar that is in our blood. They should recall that the sugar is called glucose. Write the word "glucose" on the board and define it as a special type of sugar that is in our blood that our bodies use for energy.
- 7. Place a cup of sugar water on each team's table. Do not tell students what the "substance" is. Have students use a dropper to place a drop of the substance onto a clean spot on their plates. Tell them to examine the substance with a hand lens and record their observations as before. Ask students to make a prediction of what they think the substance is by completing the sentence starter at the bottom of Copymaster 3.1.

Most likely, students will think the substance is just water since they cannot see anything in it and it appears clear.

Pass around a container of clean cotton swabs. Ask students to take one swab.
 Tell students they are going to test their predictions in a special way—by tasting the substance. Warn students to never taste an unknown substance unless an

adult has made sure it is safe. Walk around the room with the clean sample of sugar water (not previously used by students). As you go by, students should dip their cotton swab into the water. Tell the students not to taste the substance until everyone has a cotton swab.

Students should dip their swabs one time only. Instruct students not to touch the end of the swab that they will dip into the sugar water solution. Demonstrate how students should hold the swab to prevent touching the end they will dip.

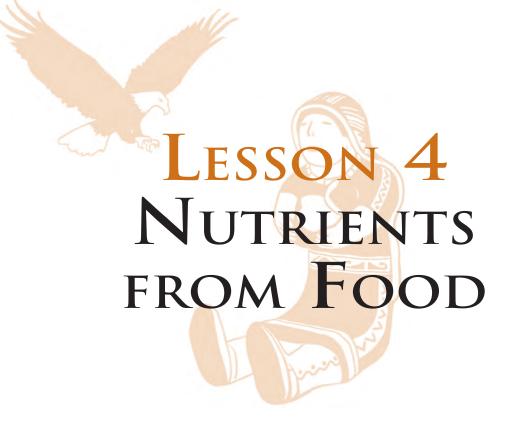
- **9.** When all students have a cotton swab dipped in the sugar water, have them taste the sugar water. Ask them if they think sugar is in the water. Tell students they can add a sentence to their predictions if they found that the substance was different from what they predicted.
- 10. Take a large, clear cup or bowl and put some water in the bowl. Pour some sugar into the bowl and stir it until all the sugar dissolves. Ask the students where the sugar went. If some say that it disappeared, then ask them if it is still in the water. If they say no, then ask, "What would it taste like if you were to taste it?"

From their earlier experience, they should recognize that it would taste sweet and that sugar is in the water.

11. Tell students that they will learn in Lesson 4, Nutrients from Food, how healthy bodies use glucose in the blood for energy. As you hold up the container of sugar water, tell students that glucose in the blood is so small that we cannot see it—just as we cannot see the sugar that is in the water. Through the process of digestion, our bodies break down some of our food into glucose.

Note to Teacher: It is important to guard against promoting the misconception that our blood has white crystals of sugar floating around in it. Students should understand that the sugar is so small that it is not visible to our eyes, and that it is a special type of sugar, similar to, but different from, table sugar.







Overview

In Lesson 4, *Nutrients from Food*, students employ an active listening strategy as you lead the class in a explanation of three different components of food: carbohydrates, proteins, and fats. Students learn what foods are good sources for each of these components. They also learn that carbohydrates are the biggest source of energy for the body.

Enduring Understandings

- Foods contain protein, carbohydrates, and fats.
- Carbohydrates are the main source of energy for our bodies.

Teacher Background

Our bodies need several types of nutrients. Carbohydrates and fats are the primary sources of energy. Proteins supply the body with building materials and enzymes. They also may be used to provide energy. Lipids, or fats, are the most concentrated source of food energy available. Every gram of fat releases approximately 9 kilocalories of energy. (The Calories listed on nutrition labels and that we refer to related to our food are actually kilocalories—equal to 1,000 Calories.) Proteins and carbohydrates release only 4 kilocalories per gram. Although fats are important nutritionally, most Americans today consume far too many and the wrong type.

Fruits, vegetables, and whole grains are important because they are a good source of carbohydrates, the body's main source of energy. Refined sugars, which contain no other nutrients and provide only kilocalories, are sometimes called "empty" Calories. In our diets today, processed and convenience foods, which have a high refined-sugar content, are replacing more nutritious foods that supply vitamins and other essential nutrients.

Outcomes and Indicators of Success

By the end of this lesson, students should be able to

1. begin to understand that food is made of several different nutrients.

They will demonstrate their understanding by

- arranging cards in a flowchart to depict nutrients from food;
- participating in discussions about proteins, carbohydrates, and fats; and
- noting what the body uses each nutrient for and what good sources of each nutrient are.
- **2.** realize that carbohydrates are our bodies' main source for energy.

They will demonstrate their ability by connecting carbohydrates with the glucose that is in our blood.

Lesson 4: Nutrients from Food Explain



In Advance

Teacher Materials

chart paper, whiteboard, or chalkboard markers paper clips (optional) envelopes (optional) 8–10 copies of Copymaster 4.1, *Food Flowchart Cards*

Student Materials

For each student
1 sheet of 11 × 17-inch blank paper
1 glue stick
1 set of cards from Copymaster 4.1, Food Flowchart Cards

Preparation

Cut apart copies of Copymaster 4.1, *Food Flowchart Cards*, to form a set of 10 cards. Place each set in an envelope or paper-clip them together. Each student will need one set.

Process and Procedure

1. Begin this lesson by asking students to tell you how the body breaks down food so that we can use it for energy.

The students should remember that this process is called digestion.

Ask them to recall what special sugar the body uses for energy.

They should say glucose.

Pose the question, "How does what we eat (our food) become something our bodies can use (glucose)?" As you pose the question, write the following on the board:

"food <u>?</u> glucose"

Allow students to give you their ideas. Tell students that they will use a set of cards to learn more about how food breaks down.

2. Hand each student a set of cards from Copymaster 4.1, *Food Flowchart Cards*, and have them arrange their cards as you show them some of the ways the body breaks down food.

You may want students to glue or tape their cards to a blank piece of paper.

3. Write the word "food" at the top of the board. Tell students that food is made of many things that our bodies use, including proteins, carbohydrates, and fats.

Write these words underneath "food" in a flowchart (figure 3.1). Have students

pronounce each word and arrange their cards as you have written them on the

board. Allow students time to glue the cards onto their papers and draw connecting lines.

Remind students to start at the top of the page and leave room to add more cards.

- Add the following information to each of the three categories as you talk about each to your students:
 - Proteins make strong muscles, heal wounds, and provide energy.
 - Carbohydrates are the main source of energy our bodies use.
 - Fats carry vitamins and provide energy. (See figure 3.2.)

Allow students time to glue their cards in place.

5. Ask students if they know what foods provide proteins, carbohydrates,

and fats for us. Allow volunteers to share ideas with the class.

Students are likely to give some appropriate examples for the different categories. For example, they may say meat is a source of proteins, bread is a source of carbo hydrates, and butter or oil is fat. Accept all reasonable answers.

6. Tell students that you ate a ham sandwich for lunch the other day. Ask them if they could put a ham sandwich in one of the categories (proteins, carbohydrates, or fats).

Students may or may not recognize that the ham sandwich contains a mix of the three types of nutrients. If students do not recognize this, tell them more about the sandwich—it included two slices of ham on bread with mayonnaise, for example. The ham in the sandwich is a good source of proteins, the bread a good source of carbo-hydrates, and the mayonnaise a good source of fat. Students should recognize that the ham sandwich actually fits in all three categories (or that each part of the sandwich fits into a different category). Tell students that we do not need the same amount of each of these to have a healthy diet.

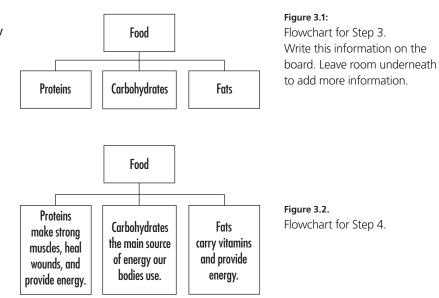
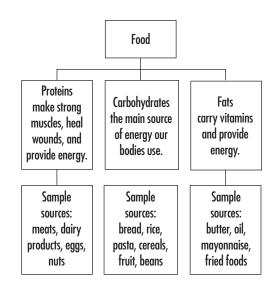




Figure 3.3 Flowchart for Step 7. Complete your flowchart with this information.

- Ask students to look at their remaining cards and add them to their flowcharts. Have students check their work as you fill in your flowchart on the board, as in figure 3.3.
- 8. Tell students that they will focus on carbohydrates because they are the main source of energy for our bodies. Sugar is one type of carbohydrate. During digestion, carbohydrates break down into glucose.



Normally, in a healthy individual, carbohydrate-rich foods are the main source of the glucose the body uses for energy.



- 9. Remind students of the question you posed at the beginning of the lesson, "How does what we eat (our food) become something our bodies can use (glucose)?" Ask students to think about this and then share their ideas with the student next to them. Then ask a few students to share with the class.
- **10.** As they share, have them recall what you wrote on the board in Step 1: food ______ glucose.

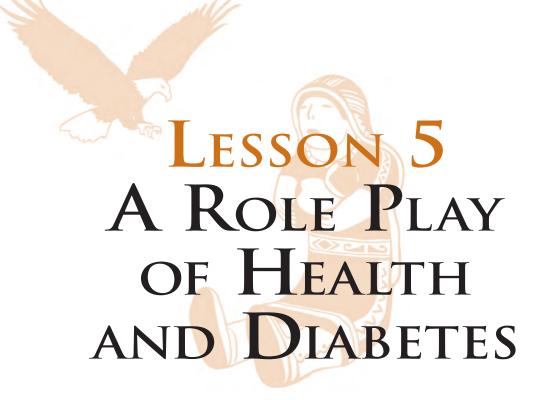
Students should share that food is broken down by digestion. Some of what food is broken down into is carbohydrates. Carbohydrates are broken down into glucose that our bodies use for energy.

11. On the bottom of their papers with the flowchart, have students write the word "food" on the left-hand side. Have them complete the sequence from their discussion:

food \rightarrow digestion \rightarrow glucose \rightarrow energy.

12. Ask students to recall the definition of diabetes from Unit 2. Diabetes is a disease that occurs when the body cannot use the glucose from the food we eat in the right way. The result is that the amount of glucose in the blood is too high.

Tell students that in Lesson 5, *A Role Play of Health and Diabetes*, they will learn how a healthy body and one with diabetes use glucose for energy.





Overview

In Lesson 5, *A Role Play of Health and Diabetes*, students role-play two scenarios. The first is the bloodstream of a healthy body. Students are blood, you give glucose to the "blood" when the body has eaten, and then the body uses the glucose for activity. This body is in balance. The second role play is of a body with diabetes. Students are again the blood and you give glucose to the blood when the body has eaten some food. This time, however, students (the blood) cannot get rid of as much glucose as before, and the glucose builds up in the blood.

Enduring Understandings

- The body gets glucose from food.
- The body uses glucose for energy.
- A body with diabetes cannot use the glucose in the right way.
- Glucose builds up in the blood in a body with diabetes.

Teacher Background

See the Overview of Diabetes section in Introductory Information.

Outcomes and Indicators of Success

By the end of this lesson, students should be able to

1. gain a basic understanding of the difference in the way a healthy body and one with diabetes handle glucose in the blood.

They will demonstrate their understanding by

- assuming the role of the blood as it moves through the bloodstream,
- accepting and releasing glucose from the blood from food and activity, and
- modeling the buildup of glucose in the blood for a person with diabetes.
- 2. suggest actions to decrease the buildup of glucose in the blood.
 - They will demonstrate their ability by
 - participating in a class discussion about ways to lower the amount of glucose in the blood,
 - explaining how people who have diabetes can manage their disease, and
 - naming things that people who are at risk for diabetes can do to lower their risk of getting the disease.
- 3. compare a model with its real-world example.
 - They will demonstrate their ability by
 - relating their actions to what happens in the bloodstream,

Lesson 5: A Role Play of Health and Diabetes Elaborate



- identifying parts of the model and what they represent, and
- comparing the model of a healthy person with the model of a person with diabetes.

In Advance

Teacher Materials

6–8 shoe boxes with lids
tape
chart paper (optional)
markers for chart paper
4–5 copies of Copymaster 5.1, *Glucose Cards*

Student Materials

For each student

1 copy of Copymaster 5.2, Blood and Glucose Model

Preparation

Decide where students will do the role-playing activity. Depending on the class size, you may be able to do the activity in your classroom by determining a path that students can follow around the room. Alternatively, with a larger class, you might want to do the activity in a hallway or perhaps a gymnasium. If you wish, you could place tape on the floor to indicate the pathway students will take. After you have decided where the activity will take place, place the shoe boxes at various places along the pathway that students will follow during the activity.

Cut apart copies of Copymaster 5.1, *Glucose Cards*, so that you have 24–30 separate cards ready for Lesson 5. You can laminate the cards to make them last longer.

Process and Procedure

- Have students review what must happen to food before the body can use it. Food must be broken down through the process of digestion. Glucose is the main sugar formed from the breakdown of food, and the main sugar our bodies use for energy.
- **2.** Ask students, "How do you think glucose gets to all parts of our bodies, from the tips of our fingers to the bottom of our feet?"

Students may know that blood moves through our bodies and can carry things to all parts of our bodies. If students do not know this information, discuss it with them.

- **3.** Tell students that they are going to participate in a role play about how the blood moves glucose around in our bodies.
- **4.** Gather students together and tell them that they all represent blood in our bodies. Give three or four students a glucose card and tell them that glucose is

always present in our blood. Have them practice moving through the room in a "stream" or down the hallway. Tell them that they are modeling blood in a healthy body.

Have students move in single or double file to represent blood moving through vessels. Students do not necessarily have to know that they are moving through "vessels," but if your students have this background, you can relate how they are modeling moving through vessels.

5. Tell them that you have some glucose that will come into the blood when their body eats some food. As the students are moving through their vessels, hand out six to eight more glucose cards to students.

The number of glucose cards needed will depend on the size of your class. About one-third of your class should have cards. Have them carry the glucose through the "healthy body" as they are all moving together.

Make sure that students recognize that the additional glucose in the blood comes from the digestion of food, and that they understand that the total amount of glucose in the blood is now higher.

(Optional) If your setting allows, you may want to post a sheet of chart paper that you can use for keeping track of the number of glucose cards in the blood at various steps of this activity. This might help students keep track of the changes and visualize the model more effectively.

6. Tell the students that the body they are in has digested the food. The glucose in the blood needs to move to the different parts of the body so that those parts will have the glucose they need to make energy. Tell the students to stop moving. If they are standing beside a shoe box, have them place their glucose card in the box.

Remind them to put the lid back on the shoe box when they have placed their card inside. Not all students will place their cards in the box. This way the blood always has glucose.

Note to Teacher: Throughout this role play, it is important to keep the focus on what is happening to the amount of glucose in the blood, not on placing cards in the shoe box. You should stop the students periodically and ask them to compare the roleplay model to what they are trying to represent. Tally the number of glucose cards in the blood (not in the shoe boxes) of the healthy body (Steps 4–8). For example, record the number of cards in the "blood" (in students' hands) at the beginning, after putting glucose cards in boxes, and after "eating." In Steps 10 and 11, students will model what happens to glucose in the blood of someone who has diabetes. By



keeping a record at both stages of the role play, students can compare the number of glucose cards in the blood of a person who does not have diabetes with that of a person who does have diabetes. Students will see that the number of glucose cards is higher in the blood of someone who has diabetes than a person who does not.

7. Ask the students to count the number of glucose cards still in the blood.

Even after students place some glucose cards in the shoe boxes, there should still be some glucose in the blood (students holding glucose cards). Make sure that students notice that the number of cards is lower than before the cards were placed into the boxes, but also that there are still some in the blood. This represents that the different parts of the body use glucose—and if they use or take in glucose, the glucose is no longer in the blood.

Some students in grades 3–4 may have heard about cells and have some idea that cells make up the body. For those students, you can use the word "cells." However, it isn't necessary to introduce this term. Students can understand the main message of this activity just thinking about "parts of the body."

Adjust the number of shoe boxes and glucose cards for your class size so that there is always glucose in the blood.

8. Repeat Steps 6 and 7, adding glucose to the blood and using the glucose for an activity, until the students understand that the blood carries glucose to parts of the body to use for energy.

With repetition, it should become more apparent to students that the amount of glucose in the blood changes as a person eats (the amount of glucose goes up in the blood) and as the body uses energy (the amount of glucose goes down in the blood because it is taken into the different parts of the body). They should also notice that glucose is always present in the blood.

- You should tape some (approximately two-thirds) of the shoe boxes closed. Try to do this without your students' knowledge.
- **10.** Repeat Steps 6 and 7, where you add glucose to the blood and have students put their glucose in the shoe boxes if they stop next to one. If the box won't open, students continue to hold their glucose card. Ask students to count the number of glucose cards in the blood before and after putting cards in the boxes.

This time, however, not all students will be able to get rid of their glucose. The counting of the cards should help students realize that in this scenario, more of the glucose is staying in the blood. If students don't yet recognize this outcome, repeat the steps one more time.

11. After students recognize that more glucose stays in the blood in this version of the model (with many of the boxes taped shut), you can explain to them that this is what happens when someone has diabetes. With diabetes, more of the glucose stays in the blood and less is taken into the parts of the body.

For a person with diabetes, it is harder for glucose to get into the cells of the body and so the blood sugar (blood glucose) rises.

If helpful, repeat the steps again. Keep reminding students of the number of glucose cards in the blood before and after stopping the movement and placing cards in boxes.

- **12.** Discuss the model with students and the message it gives. Ask the students to compare their role-playing model with blood moving through the body. Reinforce their understanding by asking questions such as these:
 - "What did you represent in the role play?" Answer: Blood.
 - "What did these cards represent?" [Hold up a glucose card.] Answer: Glucose.
 - "What did the shoe boxes represent?" Answer: Parts of the body.
 - "How did the glucose get into the blood?" Answer: From the breakdown of the food we ate.
 - "When do our bodies need glucose?" Answer: When we need energy.
 - "How did you role-play that?" Answer: When the teacher said that the body needed energy for an activity, we put the glucose in the shoe box.
 - "What was the difference between a healthy body and one with diabetes?" Answer: In the healthy body, we could open all the boxes, and in the body with diabetes, we could not open them all.
 - "How does that represent a body with diabetes?" Answer: A healthy body can use the glucose; a body with diabetes cannot use all of the glucose in the right way.
 - "What happened in the blood after the 'body with diabetes' ate more food?" Answer: More and more glucose built up in the blood.

13. Ask students to think of something a person with diabetes could do to help lower the amount of glucose in the blood.

Students may have difficulty making these connections, but probe their knowledge with questions to guide their thinking. Students should realize that eating a healthy diet can control how much glucose is in the blood. Additionally, being more active causes your body to use more of the glucose in the blood. You can add that people with diabetes must control how many carbohydrates they eat since these are the main source of glucose in the blood. Additionally, it is important to people without diabetes to control the amount of carbohydrates they eat to lower their risk of getting diabetes. Being more active helps both people with diabetes and those without the disease.





Figure 3.4:

Sample answers to Copymaster 5.2, *Blood and Glucose Model*.

Hand out copies of Copymaster 5.2, *Blood and Glucose Model*, to each student. Explain what students should do to complete the handout.

The first item on the handout is an example. The students model blood in the role-play activity. Allow time for each student to individually complete the handout.

My Role Play	Real Life
Students in the class	Blood in the body
The cards my teacher gave out	Glucose
Shoe boxes	Parts (cells) of the body
Getting more cards	Eating more food; getting more glucose from digestion of foods
Getting rid of cards	Body using glucose
Students holding more and more cards	More glucose in the blood

LESSON 6 PASSING ON THE MESSAGE OF GOOD HEALTH



Overview

In Lesson 6, *Passing on the Message of Good Health*, students have the opportunity to demonstrate what they have learned about food, glucose, and diabetes. They write a script for a puppet show and then perform the show to a class of students. In this way, students communicate to their peers the scientific information they have learned.

Enduring Understandings

Because this is the Evaluate activity, no new concepts are introduced.

Teacher Background

No additional information is needed for this lesson.

Outcomes and Indicators of Success

By the end of this lesson, students should be able to

- 1. demonstrate their abilities to communicate science concepts.
 - They will demonstrate their abilities by
 - writing a script for a puppet show about glucose and diabetes,
 - making puppets that will be the characters in their puppet show, and
 - performing the puppet show for a class of students.
- 2. demonstrate their scientific knowledge about food, glucose, and diabetes.

They will demonstrate their ability by including in the script why our bodies need food, what happens to the food once we eat it, how our bodies use food, and how this is different for a person with diabetes.

In Advance

Teacher Materials

stage setup for the puppet show (A large kitchen-appliance box will work.)

Student Materials

For each team of 4–5 students

old socks for each character in the puppet show markers, yarn, and colored paper for decorating the puppets

Preparation

Make arrangements with another class for the puppet show performances. Preferably, this would be a class that is not studying this curriculum. If it is not feasible to have another class attend, teams can perform their puppet shows for other teams in the class. Consider inviting parents, community members, and school personnel to the puppet show.



Determine the amount of time you will devote to this lesson. On the basis of the field test for this lesson, the following schedule is a guideline. You may need to alter it for your situation.

- Day 1: Introduce the activity and allow time for student teams to develop an outline or basic plan for their puppet show.
- Days 2–3: Students write a script and make puppets.
- Day 4: Teams practice their puppet shows.
- Day 5: Teams perform their puppet shows.

Process and Procedure

- 1. Divide the class into teams of four or five. Tell the teams that they are going to put on a puppet show to explain to another class what they have learned. Write the information about the puppet show on the board for all to see:
 - Every team must have a script that tells a story of good health. The story should include.
 - why our bodies need food,
 - what happens to the food once we eat it,
 - how our bodies use food, and
 - how this is different for people with diabetes.

You may have to explain that a script is everything that their puppets will "say," written on a piece of paper. Tell your students that they will hand in their scripts.

All team members should have an active part in the puppet show.

Roles can include using the puppet or narrating the show. Discourage roles that don't ask students to convey information. For example, opening or closing a curtain does not permit you to hear a student speak about the content of the show.

Every team will make their own puppets from old socks.

Explain to students that what the puppets say or do is more important than what the puppet looks like.

Puppet shows will be held on _____.

Choose a date for the puppet show. Tell students how much time they will have to get ready for the puppet show. It may be helpful to provide a schedule that lets students know how much time (and when) they will have to write their scripts, make their puppets, and practice before the puppet show.

2. Ask students to work with their teams to create an outline or a preliminary idea for their puppet shows. Explain that teams should go over their ideas with you before they begin writing all the detail.

By having students create a rough draft, you can gauge their understanding and help them put their ideas together before they spend a lot of time writing details. This should help make the writing phase more efficient.

3. After you have reviewed preliminary outlines or drafts, allow time for students to write their scripts and make their puppets.

Depending on the time available, students can divide the tasks among members of their teams. Encourage all team members to be part of the script development.

- 4. If time permits, have students practice their puppet shows within their teams.
- On the day of the puppet show, have teams draw numbers for the order of the shows. Instruct all students who are not performing to listen quietly to the presentations.

Use these shows to assess what your students have learned in Unit 3.





Health Is Life in Balance

UNIT 3 COPYMASTERS

Copymaster 2.1, *Digestion Cards* Copymaster 3.1, *Sugar Observation Guide* Copymaster 4.1, *Food Flowchart Cards* Copymaster 5.1, *Glucose Cards* Copymaster 5.2, *Blood and Glucose Model*



2.1

The taste buds on my tongue "taste" the food. My teeth grind	My saliva (spit) mixes with the food. It turns the food to mush.
the food into smaller pieces.	I can swallow the food.
The mush goes down a tube to the stomach. The tube is called	My stomach muscles mix the food. The food becomes a
the esophagus.	soupy liquid. Food stays in the stomach for about four hours.
The small intestine breaks down food. Juices from the liver mush up the food. Good things from the food go into the blood.	The blood takes the good things to parts of the body where they are needed.

The body has taken all the things it needs from the food. Waste is left behind. It goes through the

large intestine and out the body.





3.1

Table Sugar	Brown Sugar
Description:	Description:
Bowdorod Sugar	Clear Liquid
Powdered Sugar	Clear Liquia
Description:	Description:

I think the clear liquid is ______ because_____



Community, Prevention, Lifestyle, Education Diabetes Education in Tribal Schools Health Is Life in Balance

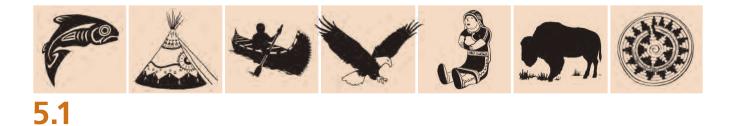


4.1

Food Flowchart Cards

Food		
Proteins	Carbohydrates	Fats
make strong muscles heal wounds provide energy	are the main source of energy for our body	carry vitamins provide energy
sample sources: meats, dairy products, eggs, and nuts	sample sources: bread, rice, pasta, cereals, fruit, and beans	sample sources: butter, oil, mayonnaise, and fried foods





glucose	glucose
glucose	glucose
glucose	glucose





Blood and Glucose Model

Directions: Complete the T-table. The first one is done for you.

My Role Play	Real Life
Students in the class	Blood in the body
The cards my teacher gave out	
Shoe boxes	
Getting more cards	
Getting rid of cards	
Students holding more cards	

Name two things you can do to have less glucose in the blood.

1.

5.2

2.

Community, Prevention, Lifestyle, Education Diabetes Education in Tribal Schools Health Is Life in Balance



Health Is Life in Balance

Grades 3-4 UNIT 4: HEALTHY HARVESTS FROM OUR MOTHER EARTH





Unit 4 Overview

DETS Grades 3–4 Unit 4, *Healthy Harvests from Our Mother Earth*, consists of six lessons that will take about eight class sessions of 30–45 minutes. Students will explore the concept of energy balance, in which the amount of energy in (from food and drinks) and energy out (from growth and activity) supports natural growth without promoting excess weight gain. This unit promotes healthier food and exercise choices in students by comparing the traditional diets and active lifestyles of early hunter-gatherer ancestors to our present American diet and lifestyle.



Unit 4 Correlation with National Standards

National Science Education Standards

In today's classroom, it is important that curriculum materials help teachers address the standards that have been set for various subject areas. The content of this curriculum unit ties directly to the National Research Council's 1996 *National Science Education Standards*. The following chart indicates which standards are addressed by the different lessons within Unit 4.

Content Standards: Grades K-4

Content Standard A: As a result of activities in grades K–4, all students should develop	Correlation with the DETS 3–4 Unit 4
Abilities necessary to do scientific inquiry	
Employ simple equipment and tools to gather data and extend the senses.	Lessons 1, 4
Use data to construct a reasonable explanation.	Lessons 1, 2, 4
Communicate investigations and explanations.	Lesson 1
Content Standard C: As a result of activities in grades K–4, all students should develop understanding of	
The characteristics of organisms	
Organisms have basic needs. For example, animals need air, water, and food.	Lesson 1
Content Standard F: As a result of activities in grades K–4, all students should develop understanding of	
Personal health	
Individuals have some responsibility for their own health. Students should engage in personal care—dental hygiene, cleanliness, and exercise—that will maintain and improve health.	Lessons 1, 3, 4, 5, 6
Nutrition is essential to health. Students should understand how the body uses food and how various foods contribute to health. Recommendations for good nutrition include eating a variety of foods, eating less sugar, and eating less fat.	Lessons 1, 3, 4

Source: Reprinted with permission from National Science Education Standards. © 1996 by the National Academy of Sciences, National Academies Press, Washington, D.C.



The National Health Education Standards

The content of this unit also meets several of the *National Health Education Standards*, as outlined in the chart on the following page.

This unit also addresses standards in the areas of language arts, math, and social studies. See Appendix A for information about the correlation of the unit's lessons to these other standards.

Standard Number	National Health Education Standard	Correlation to the DETS 3–4 Unit 4
1	Students will comprehend concepts related to health promotion and disease prevention to enhance health.	
As a result	of health instruction in grades 3 through 5, students will	
1.5.1	Describe the relationship between healthy behaviors and personal health.	Lessons 3, 4, 5, 6
2	Students will analyze the influence of family, peers, culture, media, technology and other factors on health behaviors.	
As a result	of health instruction in grades 3 through 5, students will	
2.5.2	Identify the influence of culture on health practices and behaviors.	Lessons 2, 5, 6
2.5.6	Describe ways that technology can influence personal health.	Lessons 2, 5
4	Students will demonstrate the ability to use interpersonal communic skills to enhance health and avoid or reduce health risks.	ation
As a result	of health instruction in grades 3 through 5, students will	
4.5.1	Demonstrate effective verbal and nonverbal communication skills to enhance health.	Lesson 6
5	Students will demonstrate the ability to use decision-making skills to enhance health.	
As a result	of health instruction in grades 3 through 5, students will	
5.5.1	Identify health-related situations that might require a thoughtful decision.	Lesson 4
5.5.3	List healthy options to health-related issues or problems.	Lessons 4, 6
5.5.4	Predict the potential outcomes of each option when making a health-related decision.	Lessons 1, 5
5.5.5	Choose a healthy option when making a decision.	Lesson 6
5.5.6	Describe the outcomes of a health-related decision.	Lessons 1, 5, 6
7	Students will demonstrate the ability to practice health-enhancing b and avoid or reduce health risks.	ehaviors
As a result	of health instruction in grades 3 through 5, students will	
7.5.1	Identify responsible personal health behaviors.	Lesson 6
8	Students will demonstrate the ability to advocate for personal, family, and community health.	
As a result	of health instruction in grades 3 through 5, students will	
8.5.1	Express opinions and give accurate information about health issues.	Lesson 6

Standards and Performance Indicators: Grades 3–5

Source: Reprinted with permission, from the American Cancer Society. National health education standards: Achieving excellence (2nd ed.). Atlanta, GA: American Cancer Society. 2007, www.cancer.org/bookstore.



Teacher Strategies for Unit 4

Timeline for the Lessons

The timeline provides a guideline for completing the six lessons in Unit 4. The actual amount of class time needed for the unit will reflect the practice of individual teachers. Some classes will spend more time on activities and discussions than others. Depending on the amount of time available, you may need to complete lessons over multiple days.

Lesson 1, The Ins and Outs of Energy: 45 minutes

Lesson 2, Then and Now—Traditional and Modern Foods and Activities: 75 minutes

Part I, Then and Now: 45 minutes

Part II, A Comparison: 30 minutes

Lesson 3, My Energy Journal: 30 minutes

Lesson 4, Energy In and Energy Out—Our Bodies in Balance: 45 minutes

Lesson 5, Traditional Wisdom: 45 minutes

Lesson 6, My Plan for Staying Healthy: 90 minutes

Part I, Menus of Then and Now: 45 minutes

Part II, Revisiting My Energy Journal: 45 minutes

The timeline assumes that you will teach the lessons on consecutive days. If several days separate the lessons, you may need additional time to review the previous lessons. This review will help students make stronger connections between the lessons.

Advance Preparation

To help prepare for Unit 4, review information about your region's Native American foods and activities with local tribal members or refer to the resources listed in Appendix D, *References and Resources,* such as *American Indian Foods* (Miller, 1996). Connect what you are doing at school with students' home life by sending home a copy of Copymaster 6.4, *School-to-Home Activity: Exploring the Food Groups.* You can send it home at any time during the unit.

Read the Eagle Books *Plate Full of Color, Through the Eyes of the Eagle, Tricky Treats,* and *Knees Lifted High* (all by Perez, n.d.), before beginning the lessons. When introducing the books to the students, you may want to tell each story in your own words before reading it to them. This storytelling approach engages the students' attention. The story can be read in small parts to keep the students' interest, just as elders often tell stories in many small parts. The whole book can be read as another activity during reading time. During each lesson, you can open the book to particular pages to illustrate a point. Review additional reading suggestions and decide if you wish to add them to the unit: *The Eagle Book Series: A Guide for Educators and Communities* (Centers for Disease Control and Prevention, n.d.) and *American Indian Foods* (Miller, 1996).

2 Weeks Ahead

Begin reviewing lessons.

Invite an elder from the community to talk to your class (see Lesson 5).

1 Week Ahead

Make photocopies and transparencies. Gather necessary materials.

Prepare game sets (see Lesson 1).

Make an energy journal from folded or stapled paper for each student (see Lesson 3).

Construct a clothes-hanger balance if you do not have access to a double pan balance or a flat beam balance, according to the instructions in Lesson 4.

If you wish to use the book *The Berenstain Bears and Too Much Junk Food* (Berenstain & Berenstain, 1985; see appendix D), obtain a copy from the library, your local bookstore, or an online source.

Teacher Materials for the Unit

paper clips cups (or other containers such as bowls or small boxes) chart paper (optional) markers for chart paper (optional) 2 hula hoops or 2 large circles drawn on butcher paper 2 table tents, 1 labeled "then" and 1 labeled "now" paper either folded or stapled together to make a journal for each student double pan balance, flat beam balance, or clothes-hanger balance 6 identical objects (must have the same size and mass) to use in the balances 2 sheets of poster board (optional) samples of Native American foods and harvesting tools and implements (such as wild rice, ricing sticks, baskets) 1 color copy of MyPyramid for Kids poster on the TRCD Eagle Book: Through the Eyes of the Eagle Eagle Book: Knees Lifted High Eagle Book: Plate Full of Color (optional) 1 copy of the book The Berenstain Bears and Too Much Junk Food (optional) The Maple Syrup Story: Wanaboosho and the Maple Trees on the TRCD (optional) The Ojibwa: Wild Rice Gatherers on the TRCD (optional)



Max Swift on the TRCD (optional)

1 copy of the book American Indian Foods (optional)

copies of Copymaster 1.1, Energy Game Bills (see Lesson 1 to determine number of copies)

1 copy of Copymaster 2.2, Then and Now Strips

1 transparency of Copymaster 5.2, Four Directions Woodlands Traditional

Foods Model

1 copy of Copymaster 5.3, Explanation of the Woodlands Food Circle

1 transparency of Copymaster 5.4, Native Food Circle: Choices for a Healthy Lifestyle

1 copy of Copymaster 5.5, Explanation of the Native Food Circle

Student Materials for the Unit

For each student

1 blank sheet of paper

crayons, colored pencils, or markers

1 energy journal

1 copy of Copymaster 2.1, Then and Now

1 copy of Copymaster 2.3, Then and Now Venn Diagram (optional)

1 copy of Copymaster 5.1, Native American Foods

1 copy of Copymaster 6.1, Energy In-Traditional and Fast Foods

1 copy of Copymaster 6.2, Energy Out-Activities

1 copy of Copymaster 6.3 How Much Activity?

1 copy of Copymaster 6.4, School-to-Home Activity: Exploring the Food Groups

For each team of 2 students

1 game set

copy of Copymaster 1.2, *Biff's Food and Activity Journal*, for 1/3 of the teams
 copy of Copymaster 1.3, *Teena's Food and Activity Journal*, for 1/3 of the teams
 copy of Copymaster 1.4, *Pat's Food and Activity Journal*, for 1/3 of the teams

Vocabulary List

Calorie: A Calorie is the unit that measures the energy we get from food and the energy we use in growth and activities.

Monitoring Students' Progress

Assessing what students have learned during an activity, lesson, or unit is an important part of your role as a teacher. Because assessment can play a different role at different times, Unit 4 has a variety of assessment strategies built in to the procedures. The Engage lessons often include a mechanism for learning more about the preconceptions that students have before new content material is presented. From research on learning, we know that it is important for students to recall and think about their current knowledge and ideas. Some of this information is likely to be accurate and correct, but often this opportunity enables students to consider what they know, what questions they have, and even what discrepancies they have in their knowledge. Only after considering their prior knowledge will they be ready to add new information or revise incorrect ideas.

Assessment is also important as students progress through the lessons in the unit. In this unit, an icon in the margin denotes an opportunity for assessment. The icon indicates stages at which you can assess students' understanding of the enduring understandings or major concepts the lesson is designed to convey. Specific strategies for evaluating students' understanding are provided with the icon. Some of the strategies are informal and quick, while others may be more in depth. On the basis of students' understanding at these points, you can modify your teaching practices accordingly.

The Evaluate lesson in the unit provides an opportunity for students to synthesize what they have learned during the previous lessons. By completing the Evaluate lesson, students demonstrate what they have learned and apply their understanding to new situations.

Finally, some teachers may wish to use an end-of-the-unit quiz to assess students' understanding of the ideas and concepts. The accompanying Teacher Resource CD (TRCD) includes a short test bank of questions that can be used for this purpose. The questions are in a variety of formats—multiple choice, true-false, short answer, and problem solving. As you design your end-of-unit quiz, select the questions from the test bank that represent the concepts you focused on and that align with the way you taught the unit.

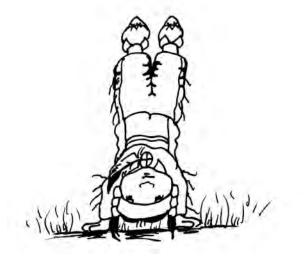




Health Is Life in Balance

Unit 4 Healthy Harvests From Our Mother Earth Student Lessons







LESSON 1 THE INS AND OUTS OF ENERGY



At a Glance

Overview

In Lesson 1, *The Ins and Outs of Energy,* students play an energy game with bills that represent the energy we take in through food and drink and the energy we use (energy out) for the activities of the day. Students reveal their current conceptions of the word "Calorie" and what they think happens when the energy in is, and is not, equal to the energy out.

Enduring Understandings

- The things we eat and drink supply our bodies with energy.
- We use energy to grow and be active.

Teacher Background

The food we eat and the things we drink supply the energy (measured in Calories) for our bodies to grow and function. This unit of energy when used in reference to food and activities and is written as *Calorie*, with a capital C. Written this way, the Calorie represents a kilocalorie (kcal), or 1,000 calories. One Calorie, or 1 kcal, is the amount of energy needed to raise 1,000 grams of water 1 degree Celsius. A calorie (with a lowercase c) is the amount of energy needed to raise 1 gram of water 1 degree Celsius.

Rigorous activity expends more energy than more-sedentary activities. On average, if the energy we take in through food balances the energy we expend through growth and activity, then our bodies will not gain excess weight. Students will not understand this completely after this first lesson. This lesson only introduces them to the concept; they will deepen their understanding through subsequent lessons.

Outcomes and Indicators of Success

By the end of this lesson, students should be able to

1. reveal their current conceptions about Calories and energy.

They will reveal their conceptions by participating in a discussion about the word "Calorie."

2. recognize that our bodies get energy from food and drink and that we use energy

for activities.

They will recognize this by

- participating in a class discussion about energy in and energy out and
- playing a game of balance using foods with stated Calories and activities with stated Calories.
- **3.** begin to think about what it means to have a balance of energy in and energy out.
 - They will demonstrate their thinking by
 - analyzing a menu and an activity list;

Lesson 1: The Ins and Outs of Energy Engage



- considering if the energy in was less than, greater than, or equal to the energy out; and
- considering what the energy balance or imbalance means to our bodies.
- 4. solve mathematical problems related to energy in and energy out.
- They will demonstrate their ability by
- correctly adding or multiplying to determine the proper amount of energy bills to add to or remove from a pile and
- comparing energy in with energy out to determine the relationship: less than, greater than, or equal to.

In Advance

Teacher Materials

paper clips cups (or other containers such as bowls or small boxes) copies of Copymaster 1.1, *Energy Game Bills* (See *Preparation*)

Student Materials

For each team of 2 students

1 game set (see Preparation)

1 copy of Copymaster 1.2, Biff's Food and Activity Journal, for 1/3 of the teams

1 copy of Copymaster 1.3, Teena's Food and Activity Journal, for 1/3 of the teams

1 copy of Copymaster 1.4, Pat's Food and Activity Journal, for 1/3 of the teams

Preparation

Determine the number of copies of Copymasters 1.2, 1.3, and 1.4, *Food and Activity Journals*, that you will need. Approximately one-third of the teams will need each case. Cut Copymasters 1.2, 1.3, and 1.4 along the dotted lines. Students will get the different parts at different stages in the activity.

Make enough copies of Copymaster 1.1, *Energy Game Bills*, to provide at least 20 100-Calorie bills and 10 10-Calorie bills for each team of students. You may want to laminate the bills before you cut them apart so that they can be reused easily.

Prepare one game set for each pair of students working as a team on the activity. Each game set includes the following:

- 20 100-Calorie energy bills
- 10 10-Calorie energy bills
- 1 cup (or other container that students can put energy cards into)
- 1 paper clip

Process and Procedure

- Ask students, "How do we get the energy that we need to be active?" Students should remember that we get energy from the food we eat. Ask, "What do our bodies do with the energy we get from food?"
- 2. Write the word "Calorie" on the board. Pronounce the word and have the students pronounce the word. Ask for volunteers to share what they know about the word Calorie. Write the students' responses on the board.

If time allows, you can ask students to discuss their ideas with each other about the word Calorie before the class discussion. Although it takes more time, it allows a chance for students to think through their ideas before sharing them with the entire class.

Use this step to assess what your students' current conceptions are about the word Calorie. It is likely that they have heard the word used in relation to food, dieting, or exercise. Accept all reasonable ideas.

3. Tell students that a Calorie is a way to measure energy. Explain that Calories are a measurement of the amount of energy that food gives us and a measurement of the amount of energy our bodies need to do different things.

Students will have different levels of experience with measurement. If students have used rulers, you can point out that centimeters (or inches) are a measurement for the length or size of an object. A cup or gallon (or liter) is a measurement for the volume of a liquid, for example. A Calorie is simply a unit of measurement. In this case, however, it is for a quantity, energy, that you cannot see or touch.

4. Continue the discussion by asking students, "Do you think that all foods give us the same amount of energy?" Follow up with, "How do we know if we are getting the right amount of energy?"

Students are likely to have some idea that different foods provide different amounts of energy, although they may not be able to explain why they think this. Students may or may not know how a person can tell whether he or she is getting the right amount of energy. Some students may tie it to food intake or exercise.

- Inform students that they will play a game to find out more about how people get the amount of energy they need.
- 6. Have students work in pairs for the energy game. Give each pair of students page 1 of one of the three food and activity journals—either Copymaster 1.2, Biff's Food and Activity Journal, Copymaster 1.3, Teena's Food and Activity Journal, or Copymaster 1.4, Pat's Food and Activity Journal. Briefly go over the handouts with students.



Point out to students that different student pairs have different information. The top part of each food and activity journal focuses on what the individual ate during one day and the number of calories that are in each food portion. If asked what they notice on the page, students should recognize that different foods have different numbers of Calories.

7. Give each pair of students a game set (see *Preparation*). Point out the pieces that make up the game set. The explanation of the game pieces will show students how to play the game.

The bills represent either 10 Calories or 100 Calories. For each food on their food and activity journals, students will count the number of Calories in energy bills. Go through an example with students. Ask one pair to read the first food item on the handout and its number of Calories. For example, if the pair has Pat's food and activity journal, the first entry is "Cereal with 2% milk" and "200 Calories." Ask students how many energy bills they would count out and have the pair actually count out the bills. Now explain that students should put the bills into the cup—and have the pair demonstrate. Explain to students that they will continue counting and putting energy bills into their cups for each food on the journal. Tell students that they will use the paper clip later and to set it aside for now.

8. Allow pairs of students to work through their food and activity journals, count their energy bills, and put the bills in the cups.

Circulate around the room and answer questions as students work. When teams get near the end of their Calorie "counting," ask them to count up all the bills in the cup (or add the numbers on the handout). After counting, students should put the bills back into the cup.

Some pairs may have extra bills that they don't need. Make sure students understand to keep these separate. Collect any bills that the students did not need for food Calories.

9. After students finish counting Calories for the food eaten (and counting the total number), discuss with them that the bills in their cups represent the total amount of energy provided by the person's food.

Make sure that students understand that this represents energy going into the body.

10. Ask students to recall why people need energy. After students recognize that people need energy for their bodies to keep working and to allow them to do activities, ask, "Do people need different amounts of energy for different activities?" Then ask, "How can we know how much energy a person needs for his or her activities?"

Accept all reasonable ideas. Explain to students that they will be continuing their game to learn more.

11. Have students continue to work with the same partners. Give each team pages 2 and 3 of the food and activity journal for the same individual they did the food energy counting for. Again, review the information briefly with students so they understand that the activities listed show what the individual did during one day and the number of Calories that each activity requires.

Students need to work with the same individual's food and activity journal as they did before. If they worked with Teena's food journal before, they should now work with Teena's activity journal.

Students may be surprised that activities such as sleeping require Calories. If students ask, provide some simple examples to explain why the body needs energy even while we sleep. Our lungs still need to work to allow us to breathe, our hearts still need to pump blood, and so forth.

12. Explain to students that they will again count their energy bills as they did before, but this time they will take the bills out of the cup and paper-clip them. Model this with students by asking one pair to tell you what the first activity is on their journal and the number of Calories that activity requires. Ask students what they would do, and then have them remove the correct number of energy bills from the cup.

Remind students that this is an example, and their individual probably listed a different activity on the journal page.

13. Allow time for students to work through the activity phase of the energy calculations and answer the questions.

As pairs work, circulate among them to monitor progress and answer questions. As pairs finish their counting, have them move on to answering the questions. Some teams will run out of bills in their piles during this last part of the game. Have students record how many more bills they would need, to reinforce their math skills.

14. Write the following sentence on the board three times. Next to each sentence, write the name of the individual (Biff, Teena, or Pat).

"Energy in was ______ energy out. (name)"

Having this sentence already written will make the discussion in the next step move more smoothly. Also, by having the statement written for each case, students can see the different situations side by side to reinforce the message that the food and drink a person takes in relates to the person's daily activities.

15. After students complete the game and answer the questions, remind them that the activity represents energy used, or energy out. Discuss the results as a class. For each case (Biff, Teena, and Pat), ask students to tell the class whether they still had bills in the cup, didn't have enough bills for all the activities, or had



enough bills for the activities but none left in the cup. As partners give their results for their case, have them complete the sentence that you wrote on the board (Step 14). They should say whether the energy in was greater than, less than, or equal to the energy out (see figure 4.1).

Case	Results	Conclusion
Biff	Energy <i>In</i> = 2,140 Calories Energy <i>Out</i> = 1,340 Calories There should be 800 Calories left in cup.	Energy in was <i>greater than</i> energy out.
Teena	Energy <i>In</i> = 1,340 Calories Energy <i>Out</i> = 2,240 Calories There would not be enough energy cards left in cup to cover all the activities (the cup was short 900 Calories in energy cards).	Energy in was <i>less than</i> energy out.
Pat	Energy <i>In</i> = 1,760 Calories Energy <i>Out</i> = 1,760 Calories There should be enough energy cards to cover all the activities, but no extra cards would be left in cup.	Energy in was <i>equal to</i> energy out.

16. Ask students to write what they think will happen to a person who followed their individual's food and activity plan for a couple of weeks. Stimulate their thinking by asking, "What happens if a person takes in more energy than he or she uses for activities?"

Help the students get started by saying, "I think a person using this plan would ..." If needed, you can prompt students further by asking, "Would the person lose weight? Gain weight? Have energy? Be tired?"

If the energy in is less than the energy out, it means that the energy supplied by the food eaten is less than the energy required by activities. Over a period of days or weeks, if this pattern continues, the person will lose weight.

If the energy in is greater than the energy out, it means the person is getting more energy from food (eating more) than needed for his or her activities. If this happens consistently, then the person will gain weight.

If the amount of energy in is equal to the amount of energy out, the person has a balance between what is taken in and what is used. If this continues consistently, the person's weight will not change.

17. Take this opportunity to remind students that Calories are not the only important thing to consider when choosing foods. To function best, our bodies need a variety of nutrients, such as vitamins and minerals, and other things that are in the food.

Figure 4.1:

Answers to Step 14, food and activity journal case results.

Although the number of Calories in foods and beverages compared with the amount of energy a person needs dictates how a person's weight will or will not fluctuate, Calories are not the only consideration for good health. A person could choose to eat a diet of high-sugar or high-fat foods and not gain weight if the total number of Calories does not exceed the amount of Calories needed. In fact, a person could even lose weight eating poor-quality food if the total Calorie intake is below the person's physical needs. However, such individuals may not be getting the other nutrients they need to keep their bodies functioning correctly.

18. Collect and save each team's handouts.

Students will use these handouts again in Lesson 4.



LESSON 2 THEN AND NOW TRADITIONAL AND MODERN FOODS AND ACTIVITIES



Overview

In Lesson 2, *Then and Now—Traditional and Modern Foods and Activities*, students compare foods and activities of the past with those of the present. In doing so, they learn that we have gone from hunting and gathering our foods to methods of obtaining food that are much less active. Students explore the importance of a healthful diet and exercise and compare and contrast the diet and activities of the past with those of the present by using a Venn diagram.

Enduring Understandings

- Our ancestors had to work hard to obtain food for their families.
- Some activities and foods of today are similar to and different from those of the past.

Teacher Background

Over time, stories have been used by Native Americans to pass on their knowledge and culture to future generations. Our ancestors were very wise. Stories are the best way for us to learn. Native American languages were not written, so passing stories along from generation to generation is a special gift that has been given to us by our elders. Stories are still a way to learn about healthy eating and physical activity. If we listen carefully, we can learn important information to take back to our families and community to help us be healthy. These stories about our traditional ways of healthful eating and being very active can even remind us of how balance in all parts of our lives can help us be healthy.

Outcomes and Indicators of Success

By the end of this lesson, students should be able to

1. actively listen to a story about past and present foods and activities.

They will demonstrate their ability by recording foods and activities from the story *Through the Eyes of the Eagle* in two categories, then and now.

2. compare and contrast foods and activities of the present and the past.

They will demonstrate their ability by using a Venn diagram to sort past and present foods and activities.

In Advance

Teacher Materials

2 hula hoops or 2 large circles drawn on butcher paper2 table tents, 1 labeled "then" and 1 labeled "now" (see *Preparation*) chart paper (optional)markers for chart paper (optional)

Lesson 2: Then and Now— Traditional and Modern Foods and Activities Explore



Eagle Book: Through the Eyes of the Eagle
1 copy of book The Berenstain Bears and Too Much Junk Food (optional)
1 copy of the book American Indian Foods (optional)
The Maple Syrup Story: Wanaboosho and the Maple Trees on the TRCD (optional)
1 copy of Copymaster 2.2, Then and Now Strips

Student Materials

For each student

1 copy of Copymaster 2.1, *Then and Now*

1 copy of Copymaster 2.3, Then and Now Venn Diagram (optional)

Preparation

Make two table tents, one labeled "then" and one labeled "now" (figure 4.2).

Make a copy of Copymaster 2.2, *Then and Now Strips*. Cut apart the copy into strips that have one statement each. Each student in the class will use one strip. If you have more than 22 students in your class, some students can work in pairs and make decisions together during the lesson.

Review the Eagle Book Through the Eyes of the Eagle.

Additional Optional Cultural Resources for Teachers

- American Indian Foods by Jay Miller, 1996 (see appendix D)
- The Maple Syrup Story: Wanaboosho and the Maple Trees (on the TRCD)

Process and Procedure

Part I: Then and Now

 Give each student a copy of Copymaster 2.1, *Then and Now.* Explain that students will listen to a story and then try to hear if the story talks about foods and activities that the eagle sees either in the past (then) or today (now). When they hear one of these foods or activities in the story, their task is to write it in the appropriate box on their handouts.

Students may have already heard the *Through the Eyes of the Eagle* story in previous units, but tell them that they will be listening this time for important information to record on their handouts. Connect this activity with the previous one by having students recall that the food we eat supplies our bodies with energy (energy in) and that the activities we do use the energy that we get from food (energy out).

2. Read the Eagle Book *Through the Eyes of the Eagle*. Pause during the story to allow time for students to write examples of foods and activities mentioned in

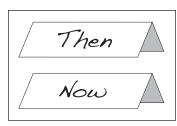


Figure 4.2: Table tents. Make your table tents like those pictured here.

Figure 4.3:

Sample answers to Copymaster 2.1, *Then and Now.* This chart

shows example student responses.

the story. An example of what students will write down from the story is shown in figure 3.

Note to Teacher: When you get to page 25 in the Eagle Book (the text on the page begins "Now as I fly around, I do not see ..."), stop and have students record foods and activities that are pictured on the page. The story does not mention these specifically, but they are shown in the artwork. Students should see foods such as soda and chips, as well as activities such as watching TV and playing video games.

3. Have students add to the "now" list any activities that they like that may not have been mentioned in the story. Additionally, have students add their favorite foods to the list.

Then Now bear chips buffalo soda deer students may add: hamburgers gardens (planted seeds) hot dogs french fries fruits and vegetables Then Now very active children not playing and moving around worked hard children inside playing video games shared watching TV men worked hard to take care of everyone women worked hard taking care students may add: of families playing baseball planted seeds playing games children helped with chores and played riding bikes hunted

Collect team's papers with their names and save them for Lesson 4.

4. After allowing a few minutes for students to add their ideas for foods and activities, ask volunteers to share their ideas with the whole class.

List responses from all students on the board or chart paper with "then" and "now" as headings. Then have students evaluate which items from both lists contribute to good health and keeping a healthy balance. Circle or mark

Foods

Activites



these in some way so that these ideas stand out. Be sure to emphasize that there are many healthful foods and activities from the past and the present, and many families in the present use ideas that have been passed down in their families from parents and grandparents.

Part II: A Comparison

Remind students of the story from Part I of this lesson (*Through the Eyes of the Eagle*). Ask students to name a few things they listed on the class chart of Copymaster 2.1. Review what things are energy in (foods) and what things are energy out (activities).

Point out to students that children need extra energy in. Ask them if they can think of why this is true. The energy in is used for growing.

- Lay two hula hoops on the floor so that they overlap. Have students sit in a circle around the hula hoops. Place the "then" table tent in one circle and the "now" table tent in the other circle. These represent a large Venn diagram.
- **3.** Hand one strip cut from Copymaster 2.2, *Then and Now Strips*, to each student. Explain to students that they should read their strip and think about whether it fits in the "then" circle or the "now" circle. Ask students what they think goes in the overlap of the two circles.

If students have had experience with Venn diagrams, then they should recall that the area of overlap is for things that can fit in both the "then" and the "now" hoops. If they have not had experience with Venn diagrams, take extra time to make sure they understand the overlapping area.



4. Ask for volunteers to stand, read their strip aloud, and place it in the appropriate place on the Venn diagram. Students should explain why they think their strip belongs where they placed it. They can ask the class for help. Continue until all students have placed their strips.

If you feel a strip is misplaced, you can ask whether the other students agree or disagree with the placement and have them give their explanations. Then ask the other class members which option they think is most appropriate. Allow students the opportunity to move their strip if they feel the discussion warrants a change. An example of a completed Venn diagram is shown in figure 4.4.

Guard against giving the impression that every food and activity from the past was good and every food and activity from the present is bad. You want students to see that they can make choices today that include healthful foods and activities. In the past, too little food could be a problem. There were times in the past that fresh vegetables and fruits were not in season and not available.



- 5. Have students add activities to the "now" list that they like that may not have been mentioned in the story. Additionally, have students add their favorite foods to the diagram.
- 6. (Optional) If you wish, you can give students a copy of Copymaster 2.3, *Then and Now Venn Diagram*. Have students copy the statements from the "hula hoop" model of the Venn diagram onto the handout.

Students can copy the hula hoop model of the Venn diagram to keep in their science folders or journals. This can serve as reinforcement for the activity.

Possible Extension

This extension activity is optional. It would be good to use at reading time, and it can help integrate the previous lesson with other subjects at school.

- 1. Pose the following questions to direct creative thinking about healthy foods:
 - "What do animals eat to stay healthy (and in balance)?"

Ask students to name foods they know in the natural world that other organisms eat for energy. This is an opportunity to help students express what they know about plant eaters, meat eaters, and animals that eat both plants and animals.

Figure 4.4:

Sample answers to Steps 2–4, Venn diagram. This diagram shows examples of students' responses. Several strips can be placed correctly in more than one position on the Venn diagram.



"What do people eat to stay healthy?"

Ask students to name foods they think people should eat to stay healthy. Allow students to express many food items and listen to other students' ideas.

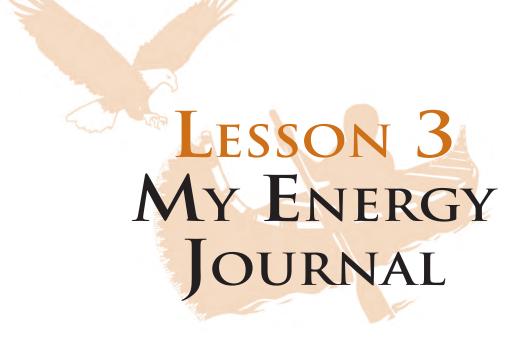
Allow students time to think about the questions and express some ideas or creative questions of their own.

2. After the students have had a chance to discuss healthy foods, gather them together and read *The Berenstain Bears and Too Much Junk Food*.

Discuss students' impressions of the story and self-reflection about what they eat and whether they get enough physical activity.

Key concepts to include in discussion (building on the information from the previous activities):

- Before modern times, our ancestors relied solely on their environment for the foods they needed.
- Each tribe had its own way to hunt, gather, harvest, store, and cook foods, depending on their region.
- More recently, people have gotten into habits of eating not-so-healthy foods and being less active (like watching TV instead of playing outside).
- Watching a lot of TV doesn't use much energy. And TV commercials expose children to enticing, memorable food ads for food that tends to provide more energy than is likely to be burned.
- Weight gain from the extra Calories in junk foods and lack of activity are two sources of the problem of increasing weight in children and the greater risk for diabetes down the road.
- With thought and effort, we can learn to eat healthy foods, drink pure water, and get enough exercise.





Overview

In Lesson 3, *My Energy Journal*, students begin keeping a journal of everything they eat or drink in one day. Additionally, they record all of their activities. Students also note how they felt at three different times during the day. In this way, students begin making connections between the energy they take in and the energy they expend as they relate to how they feel during the day.

Enduring Understandings

Collecting data about what we eat and do during the day can help us become aware of our choices.

Teacher Background

This may be the first time that students have kept a record of their activities for a day. This lesson will help teach students organizational skills as well as make them aware of their food intake and activities. Students will also be recording how they feel physically at certain times of the day. While feelings are not always a scientific way to assess whether or not a person is healthy, they are a way for children to communicate some bodily responses to their diet and activity.

Outcomes and Indicators of Success

By the end of this lesson, students should be able to document their food intake, activities, and body responses in a journal for a day.

They will demonstrate their ability by

- recording everything they eat or drink in a day,
- recording all of their activities for a day, and
- noting the way their bodies feel physically at three different times during the day.

In Advance

Teacher Materials

paper either folded or stapled together to make a journal for each student

Student Materials

For each student

1 energy journal

Preparation

Prepare journals before beginning the lesson or have students fold and staple paper to create their own journals.

Lesson 3: My Energy Journal Explore



If you wish to extend this lesson, you can ask students to record their food intake and activity for two or three days.

Process and Procedure

- Begin the lesson by having students recall what they did and learned in Lesson 2, *Then and Now.* Lead into this lesson by asking the students to think about what they have eaten today. Ask them to think about the activities they have done today. Allow students to share their responses with the class.
- 2. Tell students that they will act as a scientist by collecting data for an entire day. They will be carefully recording everything they eat and the activities they do in a day. They will also record how they feel physically during the day.
- **3.** Give each student an energy journal. Have the students make two columns with the headings "food and drink" and "activities." Explain that they will do the following for an entire day:
 - Write down everything they eat and drink.

Remind students that this includes meals and snacks. In addition, they should record everything they drink. Challenge students to write down how much of each food or item they ate or drank.

• Write down all their activities.

These activities include sleeping, watching TV, sitting at school, playing games, running, and dancing. Challenge students to write down the time they spent doing these activities.

• Write down how they feel physically.

Tell students to record this information once in the morning, once in the afternoon, and once before they go to bed at night. Tell the students to record if they are tired, sleepy, or hungry, if they feel sick, or if they feel like playing.

Note to Teacher: Be sensitive to students who may not have healthful food to eat at home. Consider choosing a school day when many students have breakfast and lunch at school.

4. Tell students that they are collecting important information (data) about themselves that they will use later in the unit.

LESSON 4 ENERGY IN AND ENERGY OUT OUR BODIES IN BALANCE



Overview

In Lesson 4, *Energy In and Energy Out—Our Bodies in Balance*, students interact with a model that represents the balance of energy in and energy out. They use a physical balance and representations of energy in and energy out to experience each of the scenarios they first saw in the Engage activity (Lesson 1). They revisit their ideas from that lesson and refine them based on additional information and experiences. The students learn what it means to have energy in that is in balance with energy out, as well as when they are not in balance. They learn that eating a healthful diet and adding activity can help us keep our bodies in balance.

Enduring Understandings

- If energy in is consistently equal to energy out, then the person does not gain excess weight.
- If energy in is consistently greater than energy out, then the person gains excess weight.
- If energy in is consistently less than energy out, then the person loses excess weight.
- A person can lower his or her risk of diabetes by maintaining a healthy weight.

Teacher Background

When the Calorie (or energy) intake (food) is consistently equal to the Calorie output (growth and activities), a person will maintain his or her weight. When Calorie intake is consistently greater than Calorie output, then a person will gain weight. When Calorie intake is consistently lower than Calorie output, then a person will lose weight. It is virtually impossible to make Calorie intake exactly equal to Calorie output every day. It is the relationship of Calorie input and output over time that determines a person's weight.

It is not simply the number of calories that determines a healthy diet and lifestyle, but the foods that supply those calories. Eating sugary snacks and high-carbohydrate foods all the time will supply the energy needed for activities and growth but will lack important nutrients for good health.

The seasonal diet and physical activity of early Native Americans provide examples for present-day people to make healthier lifestyle choices in their everyday lives. Food contains energy that our bodies use to do the work needed to live. Physical activity uses energy as we live, grow, and move. Imbalance develops over time when the energy we take in by eating is not in balance with the energy we burn from physical activity. Diabetes occurs when our bodies do not use the food we eat as it should, so there is too much sugar, or glucose, in the blood. People can become sick if their lives are not in balance. Scientific knowledge (such as

Lesson 4: Energy In and Energy Out— Our Bodies in Balance Explain



what doctors and scientists have learned about health and diseases) and traditional wisdom (such as cultural practices and understandings about food and activity from the past) help people maintain health and prevent disease. Individuals, families, and communities use scientific and cultural knowledge to promote well-being and prevent disease.

Outcomes and Indicators of Success

By the end of this lesson, students should be able to

1. understand the relationship between energy in and energy out.

They will demonstrate their understanding by

- participating in a class discussion and modeling activity of balance,
- reviewing their initial conceptions of energy in and energy out from the Engage lesson, and
- refining their responses from the Engage lesson.
- 2. consider what energy balance means for a healthy lifestyle.

They will consider this by

- evaluating what it means to have more energy in than energy out,
- evaluating what it means to have less energy in than energy out,
- evaluating what it means to have energy in equal to energy out, and
- connecting a healthy weight with a lower risk of diabetes.

In Advance

Teacher Materials

double pan balance, flat beam balance, or clothes-hanger balance (see *Preparation*) 6 identical objects (must have the same size and mass) to use in the balances Eagle Book: *Knees Lifted High*

Copymasters 1.2, 1.3, and 1.4, Food and Activity Journals, from Lesson 1

Preparation

Locate at least six identical objects that will fit on the pans of the balance or in the buckets of your clothes-hanger balance. These can be wooden cubes of the same size and mass or other common objects. The important thing is that they are all the same size and mass.

If you do not have access to a double pan balance or a flat beam balance, construct a simple balance with a clothes hanger, binder clips (or string), and buckets, as shown in figure 4.5. To use, support the balance on a dowel rod and ensure that both baskets are hanging freely on the ends of the hanger.

Process and Procedure

- Use a double pan balance, flat beam balance, or a clothes-hanger balance to demonstrate the idea of balance. Ask students the following questions to begin the lesson:
 - "What does it mean if both sides are even?" Answer: It is balanced.
 - "What would happen if I put more of these objects on one side than on the other?" Show students several identical objects that you have chosen. Answer: It would be out of balance, and the side with more objects would be lower than the other side.
- 2. Ask students to recall what they have learned in Unit 4 and the other units about the body in balance. Also ask them what they have learned about energy in and energy out.

They should remember that energy in is the energy our bodies get from the food we eat. Energy out is the energy the body uses for all of our activities.

- 3. Remind students of the game that they played at the beginning of the unit. Have them work with the same partner. Give them their handouts from Lesson 1 (Copymasters 1.2, 1.3, or 1.4, *Food and Activity Journals*) and have them recall if their team had extra bills in the pile, used all their bills, or did not have enough bills in the pile.
- **4.** Review their sentences from the end of the game and make sure they have written them correctly.

"Energy in was **the same as (=)** energy out." (Pat's case had just enough bills.) "Energy in was **greater than (>**) energy out." (Biff's case had bills left over.) "Energy in was **less than (<)** energy out." (Teena's case didn't have enough bills to finish the game.)

5. Model these relationships with the balance. Using identical objects, place some on one pan of the balance. Ask the students how many you should put on the other pan to model one of the relationships. Emphasize each time that energy in is supplied by the food we eat, and energy out is the energy that our bodies use for growing and for activities.

This will reinforce many math and science skills, so allow all students to participate.

6. Discuss what it means to be "in balance" when energy in = energy out. In Lesson 1, students predicted what that would mean. Point out that it is not easy or even possible to have the energy in equal the energy out every day.

On average, if energy in is equal to energy out, a person will not gain or lose weight—the person's weight is in balance.



Figure 4.5: Clothes-hanger balance. Construct your balance similar to this.



If the energy in is greater than the energy out, this means the person is getting more energy from food (eating more) than the person's activities use. If this happens consistently, then the person will gain weight. The excess energy is stored as fat in the body.

If the energy in is less than the energy out, this means that the energy supplied by the food that is eaten is less than the energy required by the activities. Excess energy is stored in the fat of our bodies, and if we do not eat enough to supply the needed energy for activities, the body uses this stored energy. If a person consistently has to draw on stored fat for energy, he or she will lose weight.

In summary, explain that people who keep a balance between food and activity over time will have energy to move and grow without promoting excess weight gain.

Note to Teacher: It is important to emphasize that energy in and energy out don't have to balance exactly every day. It's the balance over time that determines whether you maintain a healthy weight or begin to put on too much weight. If you take in more calories day after day than your body needs to support natural growth and activity, then your energy will be out of balance and you will gain weight. Be sensitive to students who may be overweight.

7. Ask students how we can keep from gaining too much weight. Students will likely say to not eat as much. Ask, "Is there another way to keep from gaining weight?"

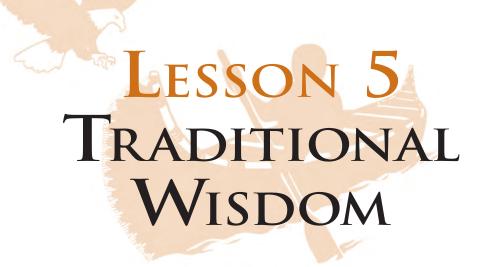
If students understand the roles of food and activity in relation to energy, they should predict that increasing the amount of activity a person gets would be another way. Take time here to explain that one way to lower our risk of getting diabetes is to have a healthy weight. Have students recall what they have learned about diabetes.

8. Ask students if they remember the word that they learned at the beginning of the unit. Remind them that it was used with their energy game. Write the word "Calorie" on the board and have students pronounce it. Remind students that a Calorie is a unit of measure for energy. The energy we get from food is measured in Calories. The amount of energy that our bodies use to function and for activities is also measured in Calories.

Note to Teacher: Take this opportunity to remind students that it is not only the Calories that matter, but also the nutritional quality (the right mix of proteins, carbohydrates, fats, vitamins, and minerals) of eating a variety of foods from all of the food groups that keeps us healthy.

- **9.** Close this lesson by reading the Eagle Book *Knees Lifted High*. Tell the students to listen for things in the story that relate to what they just learned about energy in and energy out. Question students at the end of the story about these connections.
- **10**. When you get to page 24 in the book, have all students stand and play the game described on pages 24–27.
- Remind students to continue keeping their energy journals. They should have one complete day of all their food, drink, and activities. They should also record how they felt at different times of the day. (See Step 3 in Lesson 3, *My Energy Journal.*)







Overview

In Lesson 5, *Traditional Wisdom*, students learn about traditional ways of hunting and gathering food. They learn that in the past, our ancestors were much more active because they had to work to provide food for their families. Students learn about important traditional ways as they explore different ways to group foods. They visit the *MyPyramid for Kids* poster as they also learn about traditional ways to group and organize foods. Students also create their own food circle model from foods they have recorded in their energy journals.

Enduring Understandings

- There are many ways to group and organize foods.
- Grouping foods is one way to help us make good food choices.
- Our ancestors had to work hard to provide food for their families.

Teacher Background

You can find the necessary background information for this lesson on Copymaster 5.3, *Explanation of the Woodlands Food Circle*, and Copymaster 5.5, *Explanation of the Native Food Circle: Choices for a Healthy Lifestyle*.

Outcomes and Indicators of Success

By the end of this lesson, students should be able to

1. compare different ways to group and organize foods.

They will demonstrate their ability by

- examining three different ways to group and organize foods: the MyPyramid for Kids poster, The Woodlands Food Circle, and the Native Food Circle;
- noting where the foods from their energy journals would fall in one of these models; and
- constructing a food model of their own using the foods from their journals.

2. experience traditional ways of gathering and harvesting.

They will demonstrate their ability by

- listening to stories from elders or their teacher about traditional ways of gathering and harvesting and
- role-playing a traditional wild rice harvesting or other traditional food gathering activity.
- 3. deepen their appreciation of their American Indian or Alaska Native history.
 - They will deepen their appreciation by
 - selecting their favorite foods from a list of foods either discovered, hybridized, cultivated, or developed by American Indians in the past and
 - sharing this list with their families.



In Advance

Teacher Materials

2 sheets of poster board (optional)
Eagle Book: *Plate Full of Color* (optional)
1 color copy of *MyPyramid for Kids* poster on the TRCD *The Ojibwa: Wild Rice Gatherers* on the TRCD (optional)
1 color transparency of Copymaster 5.2, *Four Directions Woodlands Traditional Foods Model*1 color transparency of Copymaster 5.4, *Native Food Circle: Choices for a Healthy Lifestyle*1 copy of Copymaster 5.5, *Explanation of Native Food Circle*

Student Materials

For each student

student's energy journal, from Lesson 3 1 blank sheet of paper crayons, colored pencils, or markers

1 copy of Copymaster 5.1, Native American Foods

Preparation

Display the MyPyramid for Kids poster.

Invite an elder from your community to talk to your class about traditional ways of gathering or harvesting food. Or arrange for students to take a field trip and actually participate in this type of activity.

Read the Eagle Book Plate Full of Color.

Process and Procedure

1. Present examples of how traditional activities for gathering or preparing healthy foods also require physical activity.

For example, traditional wild rice gathering, berry picking, vegetable planting and harvesting, maple syrup harvesting, hunting, and fishing are ways of getting healthful foods and good physical activity.

2. Invite a Native American elder to the classroom for storytelling and demonstration about traditional foods and harvesting. If it isn't possible to have an elder attend class, read *The Ojibwa: Wild Rice Gatherers* (on the TRCD) or a story from your region.

You may want to include an example from your local region and cultural perspective. Also discuss how this activity and other ways of working to harvest foods contributed to the health and strength of earlier American Indians and Alaska Natives.

Students can role-play the process of gathering wild rice using the illustrations from the story. If possible, have students participate with tribal members in harvesting wild rice or gathering another food from their region.

Lead your students in a discussion about the amount of work involved in gathering rice.

- 3. Ask students to explain how these traditional activities and foods can help keep our bodies in balance by making the energy in the same amount, or close to the same amount, as the energy out.
- 4. To reinforce the importance of traditional American Indian foods, give students a copy of Copymaster 5.1, *Native American Foods*. Ask students to circle their favorite foods. Then tell students that all of these foods were either discovered, hybridized, cultivated, or developed by American Indians of the past. Ask students to share this list with their families.

Guide students to explore how traditional foods in *our* world can be selected from these places:

- Below the ground: onions, potatoes, carrots
- Above the ground: berries, corn, squash
- On the land: buffalo, deer, antelope, rabbits
- In the water: trout, salmon, walleye
- In the air: turkey, grouse, ducks
- 5. Tell students that one way that we can learn to eat a healthier diet is to learn about different groups of foods. Remind them of the *MyPyramid for Kids* poster and the food groups depicted in that model.

This should be review for the students. Review the poster and the food groups.

 Tell students that there is more than one correct way to group foods.
 Follow Steps 6a–b to introduce the Four Directions Woodlands Traditional Foods Model and the Native Food Circle as a cultural way that some American Indians group foods by.

a. Display Copymaster 5.2, *Four Directions Woodlands Traditional Food Model*, on a transparency or mounted on poster board. Ask students to describe the different food categories they see in the picture.

An explanation for teachers is on Copymaster 5.3, *Explanation of the Woodlands Food Circle*. See the reference list in appendix D for sources of the stories in Copymaster 5.3.





b. Show students Copymaster 5.4, *Native Food Circle*, on a transparency or poster board. Again, ask students to describe the different food categories they see in the picture.

Additional information for teachers about this food circle is on Copymaster 5.5, *Explanation of Native Food Circle*.

7. Ask students to name foods they commonly eat and to suggest what group each fits into on one of the models.

This process of grouping is similar to the way that scientists organize knowledge into categories to understand patterns better. Foods may fit into more than one group. This is especially true if a student named pizza as an example. Guide students to see that the pizza has many parts (crust, meat, cheese, vegetables, etc.) and that each part may belong in a different food group.

8. Have students get out their energy journals (from Lesson 3). Ask them to share with the class some of the foods they ate and their activities.



9. Group students in teams of two or three. Have them take a clean sheet of paper and design their own food model to group the foods they have in their energy journals.

Students can combine their foods with their teammates' or design individual models. Accept any reasonable grouping model. Any number of groups is also acceptable, but it may be easier for students if you limit it to around four.

10. Have teams post their models around the room. Take the class on a "gallery walk" as you gather around each model. Ask each team to describe their model to the class.

Continue this process as you move from model to model until all teams have shared their work. Question students about their models by asking them to explain their reasoning behind their groupings. Justifying their decisions based on the evidence of their foods is an important scientific skill.

Note to Teacher: Consider reading the book Plate Full of Color during reading time to reemphasize the need to eat a healthy variety of foods.

Lesson 6 My Plan for Staying Healthy



Overview

During Lesson 6, *My Plan for Staying Healthy,* students have the opportunity to demonstrate what they have learned in Unit 4. Students will demonstrate their learning by selecting traditional and modern foods and activities to find an energy balance. They will explain what the balance between energy in and energy out means for a healthy lifestyle. Students once again revisit their energy journals and add illustrations to show a day of healthful eating, drinking, and activity. They conclude the unit by participating in a traditional game of field tag.

Enduring Understandings

Because this is the Evaluate lesson for the unit, no new concepts are addressed.

Teacher Background

Teacher background for this lesson can be found in the previous lessons. No new teacher background material is needed for this lesson.

Outcomes and Indicators of Success

By the end of this lesson, students should be able to understand the importance of making good food and activity choices.

They will demonstrate their ability by

- selecting both traditional and modern foods and activities to show a healthy balance,
- describing the importance of having energy in balanced with energy out, and
- relating balance to preventing diabetes.

In Advance

Student Materials

For each student

student's energy journal from Lesson 3
1 copy of Copymaster 6.1, *Energy In—Traditional and Fast Foods*1 copy of Copymaster 6.2, *Energy Out—Activities*1 copy of Copymaster 6.3, *How Much Activity?*1 copy of Copymaster 6.4, *School-to-Home Activity: Exploring the Food Groups*

Process and Procedure

Part I: Menus of Then and Now

1. Explain to students that the traditional Native American diet of our ancestors

Lesson 6: My Plan for Staying Healthy Evaluate



was low in fat, sugar, and cholesterol and high in fiber, natural sweetness, and whole grains.

Traditionally, American Indians were very active and ate smaller amounts of food than they do today. The foods eaten in the past were low in fat, like fish and game. Elders have told us that the amount of food eaten in a meal was much smaller than what we eat today and that all people shared their food. Seasonal abundance of foods allowed the early hunter-gatherers to store extra calories as body fat to serve as a source of body energy during periods of food scarcity. As time went on, their diet changed and they no longer worked hard in food gathering and hunting, and so they ate more refined foods and did less physical activity. In the past, vegetables, meats, and fish were dried, boiled, or broiled and less fat was used to cook food. We now know excess fat can slow the rate that blood sugar (blood glucose) is used in the body, which can lead to diabetes.



- 2. Give each student a copy of Copymaster 6.1, *Energy In—Traditional and Fast Foods.*
- **3.** Have students look at the foods that make up the traditional meal and the fast food meal. Ask students what they notice about the meals.

Students are likely to notice and comment on several things about the meals, including food preferences and dislikes. If students are unfamiliar with certain food items, explain what those foods are. Before moving on, make sure that students recognize the difference in Calories between the traditional meal and the fast food meal.

Tell students the traditional food items are selected from a traditional Anishinaabeg culture (the indigenous Odawa, Ojibwe, and Algonquin peoples of North America, who share closely related Algonquian languages). If you wish, you could add (or substitute) food items specific to your region.

4. Ask students to consider what the difference in Calories in the two meals would mean to a person's activity level for the day. Which person would need to do more physical activity?

Students should recognize that the person with the higher Calorie intake would need to do more physical activity in order for energy taken into the body would be balanced with energy expenditure (energy out).

5. Give each student one copy each of Copymaster 6.2, *Energy Out—Activities* and Copymaster 6.3, *How Much Activity*? Explain to students that they should create a plan so that a person who eats the traditional meal or the fast food meal will use the Calories from the meal in activity.

It will be helpful to most students if you give a few examples. Point out to students that Copymaster 6.2 gives information that a person who walks for an hour would use 120 Calories. If the person then rode a bicycle for an hour, he or she would burn

another 350 Calories. Help students understand that they can choose any of the activities from the list (and combine them) so that the person's energy use would be approximately equal to the Calories taken in with the meal.

6. Allow time for students to complete Copymaster 6.3, How Much Activity?

Circulate among students while they work to monitor their progress and answer questions. Depending on your students' math skills, you can decide if they work independently or with a partner.

Students will come up with a variety of activity plans. Some students will use one or two activities to reach the number of Calories in the meal. Other students may use many different activities. For example, one student may say that the person who ate the traditional meal (600 Calories) should swim for two hours to use 600 Calories. Another student may say that the person who ate the traditional meal should walk help around the house for an hour (80 Calories), play basketball for an hour (150 Calories), dance for an hour (300 Calories), and play video games for an hour (80 Calories). The activities are different, but the total amount of energy needed for them (in Calories) is about the same.

Note to Teacher: This is the assessment for Unit 4. This activity lends itself well to differentiation among your students. You decide the minimum number of food items, activities, or both they must select. You can adjust this requirement for different ability groups. Make sure that you communicate your expectations to your students clearly before they begin this task. Remind them that the required number of items is just the minimum; they can certainly do more.

7. After students have finished, ask for volunteers to share their plans with the class. After a few students have shared their plans, ask students if they can make any conclusions about the activity plans for the person who ate the traditional mean compared with the activity plans for the person who ate the fast-food meal.

Students should recognize that the amount of activity needed to balance the Calories in the traditional meal is much less than the amount of energy needed for the fast-food meal.

- Instruct students to write a sentence or two at the bottom of the handout to tell why it is important to have energy in equal energy out. Encourage them to relate this to the risk of diabetes.
- **9.** Help students draw reasonable conclusions from the evidence about the kinds and quantities of foods we eat each day.

Lead students in a discussion of their responsibility to make healthful food choices, get enough exercise, and share their knowledge with their families. Students can discuss





ideas of how they and their families can eat healthier foods and prepare foods in a healthier way. Revisit the information found in Unit 2, Copymaster 3.1, *Choose Sensible Sizes,* to reinforce that it is not only important to consider what we eat but how much we eat. Students should then apply their knowledge to decision making about personal responsibility for good nutrition and exercise.

Part II: Revisiting My Energy Journal

1. As a conclusion for this lesson and the unit, have students discuss their energy journals once again.

Students have learned many things since they first recorded what they ate for a day. Begin the activity by discussing how it is everyone's responsibility to make healthful food choices, get enough exercise, and share our knowledge with our families. Encourage students to discuss ideas of how they and their families can eat healthier foods and prepare foods in a healthier way. In this way, students apply knowledge to decision making about personal responsibility for good nutrition and exercise.



 Have students add words and drawings to their energy journals that represent "a day of eating, drinking, and activity," demonstrating what they have learned about energy balance.

Students should write their ideas in the energy journals that they started in Lesson 3. Follow-up can be planned after a week to have students record whether they actually practiced what they learned. Encourage students to take home the new ideas that they have learned to share them with their families and the community.

3. As a final activity for the unit, allow students to experience Native American games and activities. Give the students an opportunity to experience a traditional game called field tag.

Note to Teacher: *No equipment is needed. The game should be played in a gym or outside.*

Remind students that as the eagle said in the story, *Through the Eyes of the Eagle*, in the past children used to help with the chores and also play with each other to get enough physical activity to stay strong and healthy.

Tell students that this is a game that many American Indians played in the past:

- Divide the class into two groups and have them stand on opposite lines about 50 feet apart.
- One group stands on their side, with their hands held palm up at waist level.
- At a given signal, the other group walks or jogs over to the group with their hands up.

- The approaching group's players can at any time touch any standing player's hand, and the chase is on.
- The idea is for the approaching player to run back to the starting line before the standing player whose hand has been touched is able to tag the player who touched it.
- If the approaching player makes it back "home" without being tagged, the other player may go home also.
- If the approaching player gets tagged, then he or she must join the standing group on their line.
- Once all the players have done this, then the other line gets to be the approachers.
- Continue until exhausted!

This is a "never-ending" game that traditional American Indian children played for hours. It teaches endurance, agility, the ability to read body language, evasion of approachers, anticipation, patience, strategy, and other skills vital to hunting and survival.

4. If you have not previously done so, distribute one copy to each student of Copymaster 6.4, *School-to-Home Activity: Exploring the Food Groups.*

Explain to students that this handout has some activities that they can do at home with their parents or guardians. These activities will help them with healthful eating, experimenting with new foods, and physical activity.



Health Is Life in Balance

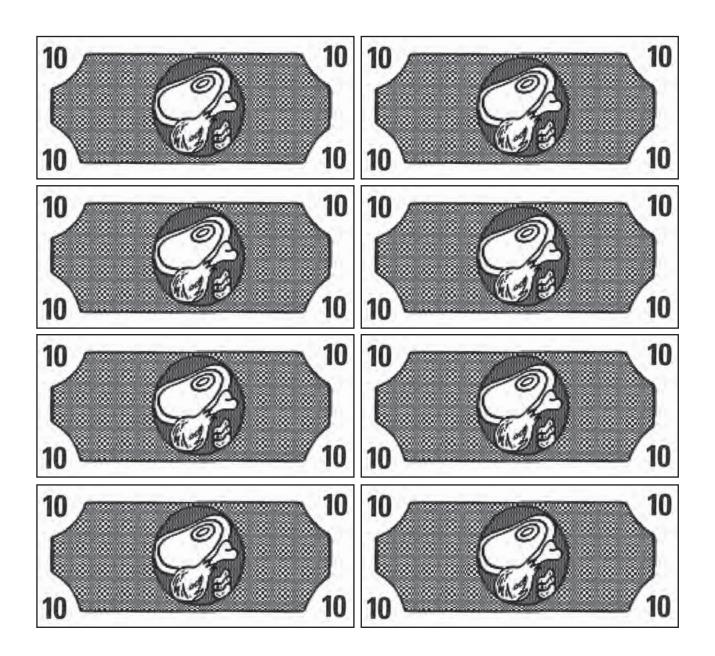
UNIT 4 COPYMASTERS

- Copymaster 1.1, Energy Game Bills
- Copymaster 1.2, Biff's Food and Activity Journal
- Copymaster 1.3, Teena's Food and Activity Journal
- Copymaster 1.4, Pat's Food and Activity Journal
- Copymaster 2.1, Then and Now
- Copymaster 2.2, Then and Now Strips
- Copymaster 2.3, Then and Now Venn Diagram
- Copymaster 5.1, Native American Foods
- Copymaster 5.2, Four Directions Woodlands Traditional Foods Model
- Copymaster 5.3, Explanation of the Woodlands Food Circle
- Copymaster 5.4, Native Food Circle: Choices for a Healthy Lifestyle
- Copymaster 5.5, *Explanation of the Native Food Circle*
- Copymaster 6.1, Energy In—Traditional and Fast Foods
- Copymaster 6.2, Energy Out—Activities
- Copymaster 6.3, How Much Activity?
- Copymaster 6.4, School-to-Home Activity: Exploring the Food Groups



1

Energy Game Bills

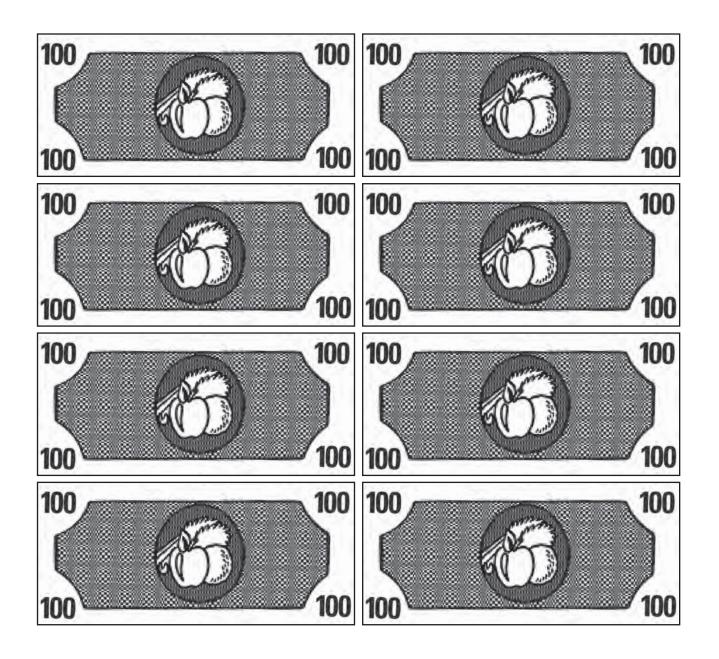


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Community, Prevention, Lifestyle, Education Diabetes Education in Tribal Schools Health Is Life in Balance **Copymaster 1.1** Grades 3–4 Unit 4, Lesson 1 Energy Game Bills





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Community, Prevention, Lifestyle, Education Diabetes Education in Tribal Schools Health Is Life in Balance **Copymaster 1.1** Grades 3–4 Unit 4, Lesson 1 Energy Game Bills



Biff's Food and Activity Journal

What Biff Ate in One Day (Energy In)

Breakfast

Pancakes with butter and syrup	400 Calories	
Glass of orange juice	100 Calories	
Lunch		
Large cheeseburger	400 Calories	
Medium French fries	400 Calories	
Soda (16 ounces)	200 Calories	
Dinner		

Hot dog	240 Calories
Chocolate shake (small)	400 Calories

After you have finished counting all your energy bills and putting them in the cup, count all of them again. Write the total number of Calories that Biff ate during the day here: ______

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Biff's Activity in One Day (Energy Out)

Sleeping (10 hours)	500 Calories
Sitting (8 hours)	400 Calories
Walking (1 hour)	120 Calories
Video games (3 hours)	200 Calories
Watching TV (2 hours)	120 Calories

1. Did you have enough energy bills for all of the Calories Biff needed for his activities? Yes or no?

If you answered yes, answer these two questions:

- a. How many Calories are in your paper clip? (Count the Calories on the bills in the paper clip.)
- b. How many Calories are still in the cup? (Count the Calories on the bills still in the cup.)_____

If you answered no, answer these two questions:

- a. How many Calories are in your paper clip? (Count the Calories on the bills in the paper clip.)
- b. How many Calories did you still need after removing all the bills from the cup? (From your list, add the Calories for each activity that you didn't have bills for.)





- 1.2
 - 2. Which of the following is true based on the results of your energy game? Circle one.
 - a. Biff ate more Calories than he used in his activities on this day.
 - b. Biff ate fewer Calories than he used in his activities on this day.
 - c. Biff ate the same number of Calories as he used in his activities on this day.
 - **3.** For Biff, his energy *in* was ______ his energy *out*. Use one of the following in the blank:
 - a. greater than
 - b. less than
 - c. equal to

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Teena's Food and Activity Journal

What Teena Ate in One Day (Energy In)

Breakfast

Strawberry toaster pastry400 CaloriesDiet soda0 CaloriesLunch240 CaloriesHot dog240 CaloriesRanch chips200 CaloriesDiet soda0 CaloriesDinner200 Calories

Taco

Ταco	300 Calories
Diet cookies	200 Calories
Diet soda	0 Calories

After you have finished counting all your energy bills and putting them in the cup, count all of them again. Write the total number of Calories that Teena ate during the day here: ______

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Teena's Activity in One Day (Energy *Out*)

Sleeping (10 hours)	500 Calories
Sitting (8 hours)	400 Calories
Running (2 hours)	620 Calories
Dancing (2 hours)	600 Calories
Watching TV (2 hours)	120 Calories

1. Did you have enough energy bills for all of the Calories Teena needed for her activities? Yes or no?

If you answered yes, answer these two questions:

- a. How many Calories are in your paper clip? (Count the Calories on the bills in the paper clip.)
- b. How many Calories are still in the cup? (Count the Calories on the bills still in the cup.)

If you answered no, answer these two questions:

- a. How many Calories are in your paper clip? (Count the Calories on the bills in the paper clip.)_____
- b. How many Calories did you still need after removing all the bills from the cup? (From your list, add the Calories for each activity that you didn't have bills for.)_____





- 1.3
 - 2. Which of the following is true based on the results of your energy game? Circle one.
 - $\alpha.$ Teena ate more Calories than she used in her activities on this day.
 - b. Teena ate fewer Calories than she used in her activities on this day.
 - c. Teena ate the same number of Calories as she used in her activities on this day.
 - **3.** For Teena, her energy *in* was ______her energy *out*. Use one of the following in the blank:
 - a. greater than
 - b. less than
 - c. equal to

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Pat's Food and Activity Journal What Pat Ate in One Day (Energy *In*)

Breakfast

Cereal with 2% milk	200 Calories
Banana	100 Calories

Lunch

6-inch roasted chicken sub sandwich	300 Calories
Raw veggies and dip	100 Calories
Baked sour cream and chives chips	100 Calories
Chocolate milk (8 ounces)	140 Calories

Dinner

Turkey and Swiss on whole wheat bread	320 Calories
Tossed salad with light dressing	200 Calories
Reduced-fat frozen yogurt	100 Calories
Popcorn	100 Calories
Apple	100 Calories

After you have finished counting all your energy bills and putting them in the cup, count all of them again. Write the total number of Calories that Pat ate during the day here:______

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Pat's Activity in One Day (Energy Out)

Sleeping (10 hours)	500 Calories
Sitting (8 hours)	400 Calories
Walking (1 hour)	120 Calories
Dancing (1 hour)	300 Calories
Playing basketball (2 hours)	300 Calories
Helping around the house (1 hour)	80 Calories
Watching TV (1 hour)	60 Calories

1. Did you have enough energy bills for all of the Calories Pat needed for her activities? Yes or no?

If you answered yes, answer these two questions:

- a. How many Calories are in your paper clip? (Count the Calories on the bills in the paper clip.)
- b. How many Calories are still in the cup? (Count the Calories on the bills still in the cup.)_____

If you answered no, answer these two questions:

- a. How many Calories are in your paper clip? (Count the Calories on the bills in the paper clip.)
- b. How many Calories did you still need after removing all the bills from the cup? (From your list, add the Calories for each activity that you didn't have bills for.)_____





- 1.4
 - Which of the following is true based on the results of your energy game? Circle one.
 - $\alpha.$ Pat ate more Calories than she used in her activities on this day.
 - b. Pat ate fewer Calories than she used in her activities on this day.
 - c. Pat ate the same number of Calories as she used in her activities on this day.
 - 3. For Pat, her energy *in* was ______ her energy *out*. Use one of the following in the blank:
 - a. greater than
 - b. less than
 - c. equal to

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Then and Now

	Then	Now
Foods		
	Then	Now
Activities		





hunting deer for food and clothing

hunting buffalo for food and clothing

hunting bear for food and clothing

men working hard to take care of everyone

strong, healthy bodies

women working hard to take care of families

planting seeds in a garden for food

children helping with chores

children playing games outside

children inside most of the time

eating foods that are not healthy

drinking soda

drinking water

eating chips

eating hamburgers

children inside watching TV

children inside playing video games

many getting sick with diabetes

eating fresh vegetables from the garden

walking to the store for food

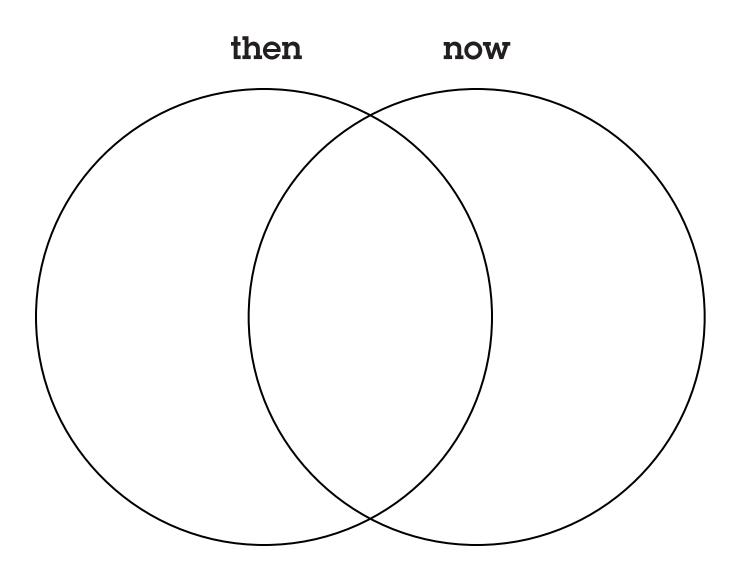
riding in cars to the store

riding horses to get from place to place





^{2.3} Then and Now Venn Diagram





Community, Prevention, Lifestyle, Education Diabetes Education in Tribal Schools Health Is Life in Balance **Copymaster 2.3** Grades 3–4 Unit 4, Lesson 2 Then and Now Venn Diagram



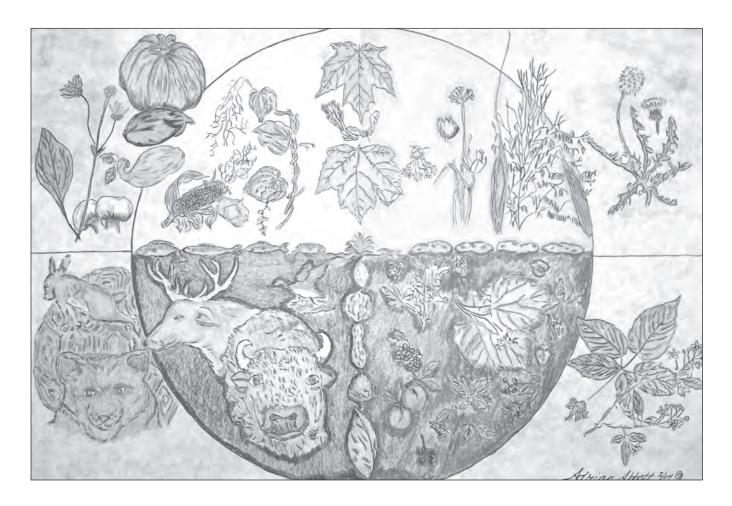
Native American Foods

Chocolate	"Trail mix"	Chilis	Pineapple
Cranberries	Squash	Pumpkins	Turkey
Enchiladas	Tapioca	Vanilla	Tomatoes
Maple sugar	Peppers	Pancakes	Maple syrup
Wild game	Chia (seeds)	White potatoes	Seaweeds
Dried fruits	Peanuts	Pemmican (jerky)	Watermelon
Sunflowers	Wild rice	Amaranth (grain)	Chewing gum
Venison	Beans	Sweet potatoes	Fish
Popcorn	Tamales	Tortillas	
Corn	Manioc	Quinoa (grain)	





Four Directions Woodlands Traditional Foods Model





Community, Prevention, Lifestyle, Education Diabetes Education in Tribal Schools Health Is Life in Balance



Explanation of the Woodlands Food Circle

At the center of the Woodlands Food Circle drawing is water, the lifeblood of Mother Earth and a need of all living things. We need to have eight or more glasses of water a day to stay healthy. Foods associated with water radiate out from the center and divide the parts of the circle: maple leaves and seeds to symbolize maple syrup, potatoes, nuts, and fish. Stories for this part of the drawing are the *Water Stories, The Gifts of the Trees,* and *The Manaboosho and the Maple Trees.* The sugar bush stories also deal with flavorings and how we used the plant as a medicine. The work involved with making maple syrup was a way to help the people stay in shape.

At the top right of the circle are the grain foods. The main plant here is wild rice. Other seeds that are used for food are added—possibly sorghum, sunflowers, or chia. The dandelion at the outside of the circle shows that the color of this segment is yellow. For many tribes, corn would be the most important plant in this segment, but in the Lake Superior region, the summers have usually been too short and cool for grain corn to ripen, so corn is shown as a vegetable. Starchy potatoes are at the edge of this group. They are high in carbohydrates, but are not grains or seeds. The stories *Wild Rice and Nanaboozho* and *Father of Indian Corn* are for wild rice and corn, and we need six to eight servings a day to stay healthy.

At the lower right of the circle, often colored red for ripeness and the fullness of life, are the fruits and berries. The picture shows strawberries, wild cherries, wild plums, blueberries, blackberries, and raspberries. *The Heartberry* is a story about fruits (available on the TRCD). We need four to six servings of fruit each day.

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The lower left of the circle shows animals commonly used for meat: ducks or geese, buffalo, deer, rabbits, turtle, bear, and fish. High-protein nuts are on the edge of this section. This part of the circle would often be colored black. *How the Deer Got His Antlers* and *Rabbit's Revenge* are for the animal and meat portion of the drawing. We should eat three to four servings of meat or other high-protein foods a day to stay healthy.

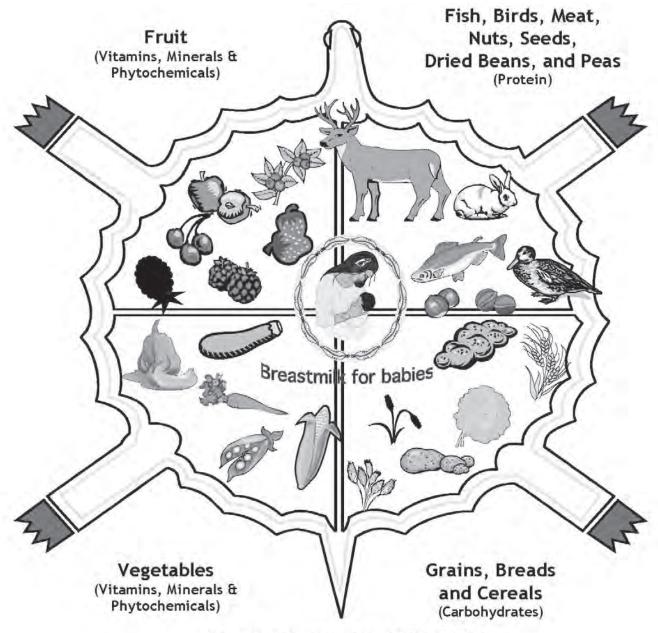
The upper left part of the circle shows vegetables: corn, pumpkins, mushrooms, beans, greens, and squash. Stories about the three sisters tell of peas, beans, and squash. We need three to five servings a day to stay healthy.

Milk and dairy foods do not appear in this drawing of traditional foods because, except for babies getting mother's milk, Woodland peoples did not use any milk or dairy foods until dairy animals were brought from other countries.





Native Food Circle: Choices for a Healthy Lifestyle



Dairy products were not a traditional food.

Community, Prevention, Lifestyle, Education Diabetes Education in Tribal Schools Health Is Life in Balance



Explanation of the Native Food Circle

Recommended Number of Servings per Day

Food Group (Count as one serving.)	Sedentary Adults and Children Ages 1 to 4 Years	Children Ages 5 to 12 Years	Active Adults and Teens	Pregnant or Breast- feeding Women or Teens
Grains, breads, cereals: 1 slice bread, 1 roll, ¹ / ₂ bun or bagel, ¹ / ₂ cup cooked rice, pasta, cereal	6	6–9	9–11	9
Vegetables: ¹ / ₂ cup cooked, ³ / ₄ cup vegetable juice, 1 cup raw leafy vegetable	3	3–4	4	4
Fruit: ¹ / ₂ cup small pieces of fruit, ³ / ₄ cup fruit juice, 1 medium fruit, ¹ / ₄ cup dried fruit	2	2–3	3	3
Fish, birds, meat, nuts, seeds, dried beans, and peas: 2–3 ounces cooked lean meat, fowl, or fish; ¹ / ₂ cup nuts or seeds; 1 cup cooked dried beans, and peas	2	2	2	3

Breast milk: Breast milk should be given to all infants from birth to one year or older. Solid foods should be introduced around six months of age.

Dairy: Dairy products were not a traditional food. They provide calcium and vitamin D. Some native people cannot tolerate dairy products because they lack an enzyme that breaks down the "milk sugar", or lactose. Native people

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obtained calcium from alternative sources such as bone soup or broth, fish-head soup, salmon with the bones, coush, camas, wild carrots, oysters or clams, and leafy greens like dandelion leaves. Today, calcium-fortified orange juice, leafy green vegetables, dried beans, canned salmon with the bones, or supplements can help Native people get the right amount of calcium. If you tolerate dairy products, two to three servings a day are recommended. One serving equals 1 cup of milk, 11/2 ounce cheese, 1 cup yogurt, or 2 cups cottage cheese.

Water: Water is a natural resource and given to Native people by the Creator. Teas were made with a variety of plants. Eight to ten glasses of water a day are recommended.

Extras—fats and sweets: These foods provide a lot of extra calories, but very few of the vitamins and minerals needed by the body to function well. Foods like butter, margarine, salad dressing, soda pop, soft drink mixes, sport drinks, pies, cakes, desserts, sugar, honey, candy, fried foods, chips, and fry bread are recommended in very small amounts. Traditional fats and sweets include animal fat, fish oil, honey, and maple syrup.

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Energy In—Traditional and Fast Foods

Traditional Meal

Venison roast (4 ounces)	200 Calories		
Wild rice (1 cup)	180 Calories		
Fiddleheads (greens; 1 cup)	35 Calories		
Bannock (flat bread; 4 ounces)	150 Calories		
Raspberries ($1/_2$ cup)	35 Calories		

Total traditional meal:

Fast-Food Lunch

Total fast-food meal:	1,660 Calories
Ice cream (1 cup)	320 Calories
Soda (16 ounces)	200 Calories
French fries (2 cups)	610 Calories
Cheeseburger (4 ounces)	530 Calories





Energy Out—Activities

Activity	Calories per Hour			
Sleeping	50			
Sitting	60			
Walking	120			
Playing video games	80			
Watching TV	60			
Running	310			
Dancing	300			
Playing basketball	150			
Helping around the house	80			
Riding a bike	350			
Playing soccer	360			
Swimming	300			





Name

How much activity would a person need to do to use the Calories from each meal? Choose activities listed on the handout *Energy Out—Activities* to find out how many Calories a person uses when doing different activities.

	Traditional Meal	600 Calories	Fast-Food Meal	1,600 Calories		
Activity and number of Calories used						
Total number of Calories used in activities						

Write one or two sentences explaining why it is important for Energy In to balance Energy Out.





School-to-Home Activity: Exploring the Food Groups

Linking Food Groups with Physical Activity

At school and at home, your child has been learning about different food groups and examples of physical activity. Your child has also learned the importance of being physically active every day, or most days, and to make healthful food choices.

We realize that parents provide the foundation for these concepts at home. We realize that you provide the guidance for your children in healthful eating and physical activity. Here are three activities to do at home with your child to promote healthful eating and physical activity to reinforce the concepts he or she has learned in class.

The following activities will help incorporate healthful eating, experimenting with new foods, and physical activity.

Directions: Choose one or more of the following activities. These activities can take place during the weekend or anytime that is convenient for you and your child.

Home Activity 1: Integrate your child into the kitchen. Invite your child to start helping with cooking so that it becomes a family affair. Cooking together also keeps your child active. Show your child the difference between slicing and dicing. Give your child small, safe cooking duties such as stirring dry ingredients or placing fresh vegetables and reduced-fat cheese on your homemade pizza. Remind your child why you're cooking the nutrient-rich foods you chose, rather than fast food or a frozen







dinner. If your child shows absolutely no interest in culinary activities, suggest that he or she go outside and play.

Home Activity 2: Introduce the "Three-Bite Rule": be open to the adventure of new tastes! Let your child know that you will be trying several new foods. Remind your child that this can be fun:

- Implement the three-bite rule: everyone has to take at least three bites of every food on the plate.
- After trying all the foods, give each food a grade. A means it's great, B means it's pretty good, C means it's just OK, D means it's not very good, and F means blah!
- Reassure your child that you will serve a lot more of the A foods, and no more of the F foods.

Make sure your child understands these concepts and be sure to answer any questions so that you can both be working toward the same goal.

Home Activity 3: Take 45 minutes to go outside and play with your child. Play tag, ride a bike, fly a kite, play hide-and-seek, chase your child or have your child chase you. Take a walk around your neighborhood. Help your child see how fun being active can be.

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Health Is Life in Balance

Grades 3-4 HEALTH IS LIFE IN BALANCE APPENDICES



Appendix A: Contents of Grades 3–4 Individual Units

The table on the following page shows a summary of each unit's content along with the books or stories used, the physical activities conducted, and the content standards addressed.



Grades 3–4	Eagle Books and Stories	Physical Activity	C	ontent	Standar	ds
			Science	Health	Language Arts	Social Studies
Unit 1, <i>Exploring a Healthy Balance</i> Recommended for Grade 3						
Unit 1 will help students understand that their overall health consists of many areas that work together. Students will explore the four areas of their lives that work together in harmony that can help promote good health. Participation in the Round Dance and story discussion are used to explore the importance of people in our lives who give us wisdom. Concepts of diabetes and glucose are introduced.	The Gifts of the Trees; Through the Eyes of the Eagle; Knees Lifted High	Round Dance	A, C, F, G	1, 2, 3, 5, 7, 8	1, 5, 6, 12	I, II, IV, V, VII, VIII
Unit 2, Being Smart about Being Healthy Recommended for Grade 3						
In Unit 2, students will develop the skills they need to become informed consumers by learning to evaluate products and beginning to under- stand the motivation behind the commercial messages they continually see and hear. Skills for making good choices are learned from identify- ing food groups, nutrients, and portion sizes by learning to read food labels. In learning about more healthful food choices and being physically active every day, students will acquire the skills to prevent obesity and diabetes.	Tricky Treats; Through the Eyes of the Eagle	Celebra- tion Feast, Round Dance	A, C, F, G	1, 2, 5, 7	1, 3, 5, 6, 7, 11, 12	I, IV, V, VII, VIII
Unit 3, <i>Exploring Digestion and Diabetes</i> Recommended for Grade 4						
Students will discuss why we eat and explore the digestive process. They will be asked to think like scientists as they investigate how the body uses the foods they eat. Students will role-play how a healthy body and one with diabetes use glucose in the blood. Finally, students will script and perform a puppet show to communicate their understanding of the concepts of Unit 3.	The Maple Syrup Story; Wanaboosho and the Maple Trees (optional)	Role Play	A, B, C, F	1, 2, 3	1, 5, 7, 12	I, II, IV, V, VIII
Unit 3, Healthy Harvests from Our Mothe Recommended for Grade 4	r Earth		1		1	I
Students will explore the concept of energy balance, in which the amount of energy in (from food and drinks) and energy out (from growth and activity) supports natural growth without promoting excess weight gain. Unit 4 promotes healthier food and exercise choices in students by comparing the traditional diets and active lifestyles of early hunter-gatherer ancestors with our present American diet, recognizing science and traditional wisdom and exploring present-day food and activity choices.	Plate Full of Color (optional); Through the Eyes of the Eagle; Tricky Treats; Knees Lifted High; The Berenstain Bears and Too Much Junk Food (optional); The Maple Syrup Story: Wanaboosho and the Maple Trees (optional); The Ojibwa: Wild Rice Gatherers (optional); American Indian Foods (optional)	Role play of harvesting and food gathering, Native American field tag	A, C, F, G	1, 2, 5, 7	1, 5, 7, 11, 12	I, II, IV, V, VII, VIII

Appendix B: The Round Dance

The Round Dance goes by many names for different tribes: *Kahomni*, 2-Step, Owl Dance, Friendship Dance, and Rabbit Dance. It is a social dance that often is a part of Native American powwow activities. A powwow is a celebration where people gather to sing Native American songs, dance, see family and friends, conduct honorings such as giveaways, and engage in singing and dancing competitions.

Powwows take place all over the United States and Canada. During the summer months, there is usually a powwow every weekend in different areas of the United States. Contact the tribe in your area and find out when their annual celebration or powwow takes place. Take your family to the powwow and participate in the intertribal dancing and round dancing. Powwows are social events that are open to the public (some powwows may require an admission fee). You will find that a powwow is well attended by Native American and non-Indian people alike.

Listen to the master of ceremonies (MC), who is the official who lets everyone in attendance know the activities and events that are taking place during a powwow. The MC will let the audience know when the dances are taking place where anyone is welcome to participate. These dances are called Intertribals; the MC will call for the Round Dance.

You can find more powwow information on the Web site www.powwows.com.

The CD *Round Dance Songs Volume 2*, from the Native American Heritage series released by Arbor Records (www.arborrecords.com), has a good assortment of suitable music for Round Dances. The selections are performed by drum groups from a range of tribes and areas. From the liner notes:

A popular dance for non-Indians during an intertribal song is the Round dance. It is an easy dance to follow as everyone joins hands inside the dance area forming a big circle moving clockwise. If there are many people participating, another circle is formed inside the first circle that moves in the opposite direction. The Round dance creates a simple and fun activity that brings both cultures together for positive interaction.

In celebrating this circle of life, it is no coincidence that the structure of all Powwows is a circle. The dance area, known as the Arbor, is located in the center of the designated area. It can be either outdoors or indoors. The Arbor is blessed prior to the Powwow starting and is considered sacred ground during the entire celebration. The Arbor is treated with the same respect as would be given to a church.

Today the Round Dance still continues to be the most entertaining dance style to the masses.

Appendix C: Guidelines from the American Indian Library Association

The following information is taken from the American Indian Library Association Web site publication *"I" Is Not for Indian: The Portrayal of Native Americans in Books for Young People:*

Over the years, the most frequently asked questions by librarians concerning books on Native Americans have centered around the ideas of "How can I personally tell good books on Indians from bad?" and "Where can I find reliable reviews?" Neither of these are as simplistic as they sound. Reviews abound in the usual sources for books dealing with Native peoples, but most are written from a literary angle, or from a children's/YA [young adult] literature perspective. There are plenty of "good" books well-written, exciting, from respected authors, much-loved by their readers, with well-developed characters—that are terrible when examined with the criteria of whether the Native American(s) depicted in them are accurately or even humanly portrayed. For the most part, this criticism is directed at fictional works, where the greatest stereotypes and wildest imaginings about Indians still hold sway. Nonfiction has been improving greatly in recent years, but there is often still a tendency to oversimplify to the point of distortion, especially in titles for the youngest readers.

Perhaps even more difficult is the question of being able to judge as librarians whether a book is harmful or not. We are nearly all products of the public school systems in this country. As most Native Americans can remind you, Indians are not even mentioned in American history classes much after the middle grades. And when we are mentioned, it is always in terms of Pilgrims and Thanksgiving, and sometimes as adversaries to be overcome in the "settling" of the West. As far as most Americans learned in school, Indians pretty well ceased to exist after 1890. So there are very good reasons why librarians feel somewhat at a loss when it comes to recognizing accuracy in books about Indian peoples.

Add to this lack of education the very pervasive and subtle dehumanizing stereotypes that are ingrained as part of American popular culture, and you've got a lot to overcome before you can identify these things in children's books. It should also be pointed out that these stereotypes and misperceptions are commonly held by all Americans of all races, often, tragically, by Indian children themselves.

Think of the following images that are prevalent in American culture today, and then transfer the image to any other ethnic group (or your own). How does it feel to you? Why do Native Americans alone receive these images? In other words, there are certain kinds of deeply rooted images that do not have equivalents among other minority groups. For example, there are derogatory terms for all ethnic and minority groups, but why are Indians the only ones with sports teams named after them? Why do we have the Washington Redskins, but not the Pittsburgh Darkies or the Dallas Rednecks or the San Francisco Coolies? Why do these hypothetical teams sound so offensive or shocking, but the Atlanta Braves and Cleveland Indians, complete with Chiefs Nok-A-Homa and Wahoo, do not?

Why are hideous caricatures of Native American men available as Halloween masks right up there with vampires, witches and other monsters? Even more to the point, why does the average American see nothing wrong with purchasing that mask and dressing up her child as "AN INDIAN" for Halloween, but would never think to masquerade as another ethnic group, although I have seen "Arab" costumes at times. What does this say about our perceptions of Native Americans as human beings?

These are just two examples of the cultural baggage that we as Americans carry around that make it difficult for us as librarians to know where to start in identifying bias-free books for our libraries. Recognizing that these images exist is a big step in the right direction. But subconscious images of what Indians are comprise a very deep part of the American psyche, and you may be surprised at how uncomfortable you feel when asked to give up these images, no matter how you feel about them intellectually.

For example, *The Indian in the Cupboard* and its sequels are much-loved books by librarians and their patrons. But for Indian people, these are some of the worst perpetrators of the most base stereotypes. The miniature toy Indian (Indians portrayed as objects or things) is described as an Iroquois warrior, but is dressed as a movie western version of a generic plains Indian "chief", complete with eagle feather headdress. The warrior is described in the most stereotypical terms and speaks in subhuman grunts and partial sentences. He is manipulated by a more



powerful white child, fostering the image of the simple and naive Indian whose contact with the white man can only benefit him and his people.

Despite the fine writing and exciting plots, these books foster continuations of classic blatant stereotypes. Yet it has been our experience that a disturbing number of librarians greatly resist criticism of these titles. It is our hope that the following bibliography and suggestions for evaluating books on Native Americans for young people will assist you in evaluating your collections and serving your patrons. There will be a great opportunity to educate young people over the next two years particularly, as interest in things "Indian" will increase with the coming of the five hundredth anniversary of the Columbus invasion of the Americas.

Selective Bibliography

The following bibliography is broken down into four sections: recommended titles, titles not recommended, sources of reviews and information on recognizing stereotypes, and sources for obtaining books. The first two sections of book titles are necessarily selective and somewhat random. The aim was not for comprehensiveness at this time, but rather to present a sample evaluation of what's out there. Also, we were not concerned with developing a list of good books, but rather with commenting on titles being published. The authors of this bibliography looked at titles from two different perspectives. Naomi Caldwell-Wood

surveyed titles in her local school and public libraries, resulting in reviews of older titles and of those, perhaps, in your own libraries. Lisa Mitten looked at mostly new titles that she reviews and recommends for Carnegie Public Library of Pittsburgh, and for which you have probably read recent reviews for in the review journals. Annotations are provided for most of the titles.

1. Recommended titles:

American Indian Stories / Herman Viola (general editor). Milwaukee: Raintree Publishers, 1990. (Grades 3–5) I saw seven titles in this series, which, despite the title, are biographies (not stories) of well-known and less well-known leaders in the Indian world. The people written about so far are Sarah Winnemucca, Jim Thorpe, Carlos Montezuma, John Ross, Geronimo, Sitting Bull, and Hole-in-the-day. They are well-done, with excellent illustrations.

American Indian Tribes / Marion E. Gridley. New York: Dodd, Mead & Co., 1974. (Grades 5–9) Given the enormity of covering all of the American

Indian tribes, Gridley has written one of the better books on this subject. She divided the tribes into twelve categories and has only listed tribes considered to be distinct. Each tribe is discussed in terms of its past and current condition. Numerous photographs can be found. Biographical information about notable individuals in each tribe has been included. Religion was not a[d]dressed in any detail.

Atariba & Niguayona / Consuelo Mendez. San Francisco: Children's Book Press, 1988. (Grades 1–3). One of this publisher's bilingual Fifth World Tales, this is a retelling of a Taino Indian tale from Puerto Rico. All titles in this series are highly recommended.

Dancing Teepees: Poems of American Indian Youth / selected by Virginia Driving Hawk Sneve. New York: Holiday House, 1989. (All ages) A thoughtful and sensitive collection of poems from the oral traditions of Native Americans and contemporary tribal poets compiled by a Lakota woman who grew up on the Rosebud Sioux reservation. The illustrations accurately reflect traditional Native American art forms and serve the text well. A welcome addition to any poetry collection.

The First Americans: Tribes of North America / Jane Werner Watson. New York: Pantheon, 1980. (Grades K–3) A very easy-to-read and understandable book which introduces the major Native American regional groups: plains, woodlands, Inuit, northwest and southwest. The short glimpses into each of the groups [are] handled by providing factual information about dwellings, duties of adults and children, and respect for religious rites and ceremonies. Illustrated with pen and ink sketches.

Happily May I Walk: American Indians and Alaska Natives Today /

Arlene B. Hirschfelder. New York: Scribner's, 1986. (Grades 5+) Excellent summary of Native American life and activities today. Very up-to-date, going far towards lifting Indian people out of the nineteenth century where they've been stranded in many books. Very useful for adults, too, and as a reference tool.

Houses of Bark / Bonnie Shemie. Montreal: Tundra Books, 1990. (Grades 3–5) Well-illustrated survey of traditional house types of the northeast. However, the final llustration unaccountably shows a Plains girl working on a piece of bark, for some reason.

Iktomi and the Ducks / Paul Goble. New York: Orchard Books, 1990. (Picture book; all ages) All of Paul Goble's books are highly recommended, especially the Iktomi stories, which perfectly convey the lessons and spirit



of trickster stories. Goble flawlessly captures the flavor of Indian humor and the easy blend of cultures so common in contemporary Indian America, and so lacking in the works of other authors.

Indian Chiefs / Russell Freedman. New York: Holiday House, 1987. (Grades 5+) Freedman has accomplished a well-balanced collective biography of six western Indian chiefs: Red Cloud (Oglala Sioux), Satanta (Kiowa), Quannah Parker (Comanche), Washakie (Shoshone), Joseph (Nez Perce), and Sitting Bull (Hunkpapa Sioux). The short biographies of twenty pages each contain actual quotes by the various chiefs within an accurate historical setting. Freedman was careful in his use of terminology. He prefaces the book by providing information on how the term "chief" was determined and used by the white settlers and government and how various tribes distinguished the many levels of leadership. This indexed book is illustrated with numerous sketches and photographs and is made complete with a bibliography of sources for further study.

Indian Summer / Barbara Girion. New York: Scholastic, 1990. (Grades 5–8) An excellent novel of the cultural adjustments Joni must make when she finds herself living on a modern "Woodlands" (i.e. Iroquois) reservation with her family in upstate New York one summer. Also manages to touch on a number of issues important to contemporary Iroquois, without being preachy. Girion does a fine job.

Keepers of the Earth: Native American Stories and Environmental Activities for Children / Michael J. Caduto and Joseph Bruchac. Golden: CO: Fulcrum, 1988. (All ages) Superbly written and illustrated presentation of Native American philosophies about the environment. Joseph Bruchac has compiled a number of collections of myths and legends of the Abenaki and Iroquois peoples, all of them excellent. He is also a well-known storyteller; a librarian can feel secure about purchasing anything he has written or is associated with.

The Last Buffalo: Cultural Views of the Plains Indians: The Sioux or Dakota Nation / W.E. Rosenfelt. Minneapolis: T.S. Denison & Co., 1973. (Grades 4–6) Rosenfelt collaborated with Ed McGaa, Oglala Sioux, and as a result we have a straightforward and sensitive text which strives for honesty. Unfortunately, illustrations are very mediocre pen and ink drawings; the text would have been much better served by photographs. Although the title implies an end to the Lakota Nation, Rosenfelt points out that the culture is very much alive. The section on religion is especially well-done. Highly recommended.

North American Indian Medicine People; North American Indian Survival Skills; North American Indian Sign Language / all by Karen Liptak. New York: Franklin Wat ts, 1990. (Grades 4–7) Watts has been putting out several fine nonfiction titles in series on American Indians, including a series on different tribes for younger readers. These surveys of cultural traits are representative, providing a balanced look at these areas of Native American knowledge.

The People Shall Continue / Simon Ortiz. San Francisco: Children's Book Press, 1988. (Grades 3–6) Ortiz, a Pueblo poet, has written the best treatment available for young children in this succinct recounting of the interactions between the Native and non-native peoples of North America from Columbus to the present day. Illustrations are vibrant and bold, and the text is honest and clear. An important acquisition for the upcoming Columbus Quincentennary!

Pueblo Storyteller / Diane Hoyt-Goldsmith. New York: Holiday House, 1991. (Grades 3–6) Ten-year old April of Cochiti Pueblo takes the reader on a photographic visit through the pueblo, introducing him to her family, traditional methods of bread-baking, pottery-making and drum-making. She participates in a Buffalo Dance and tells the reader her favorite creation story. An excellent title to introduce children to the world of the contemporary reservation child. A superb complementary title, from a boy's perspective, is *Pueblo Boy: Growing Up in Two Worlds* / Marcia Keegan. New York: Dutton, 1991.

The Rain Dance People: The Pueblo Indians, Their Past and Present / Richard Erdoes. New York: Alfred A. Knopf, 1976. (Grades 6+) This book is an excellent example of detailed research of both documented print sources and personal interviews, photographs and sketches. Erdoes traces the history of the Pueblo Indians from prehistoric times to the mid-1970s and provides information about their unique lifestyle and how they have struggled to maintain it. His straightforward retelling of how the west was "won" serves to [dispel] the myth of the winning of the wild west as a glamorous event. Careful and detailed coverage is given to the invasion of missionaries who traveled to Pueblo land to stamp out the ancient native religion. Readers are informed of the boarding schools that young Pueblo



children were required to attend where they were forbidden to speak "Indian". The strengths of the Pueblo communal and governmental structures are examined in great detail. Throughout the book Erdoes weaves an explanation of the significance of art in Pueblo culture. An extraordinary work. Highly recommended.

The Shadow Brothers / A.E. Cannon. New York: Delacorte Press, 1990. (Grades 6–10) A well-done novel of a Navajo teen as told by his adoptive (non-Indian) brother. Henry Yazzie has been sent to live with his father's white friend's family so that he can attend good schools. An excellent student and athlete, the arrival of a second Native boy to the school has Henry questioning his identity as a Navajo. Deals with issues many Indian kids face as novelties in their schools.

Sweetgrass / Jan Hudson. New York: Philomel, 1989. (Grades 5–8) A superb first book about a Blackfoot girl in the days just before heavy interaction with settlers by a Canadian author who has recently died. Dawn Rider, 1990, was a disappointing second work.

The Tlingit / Alice Osinski. Chicago: Children's Press, 1990. (Grades 1–3) An entry in the New True series on American Indian tribes. Like the other titles in this series, these are superb introductions to the histories and cultures of the different peoples they treat. Of particular value is the care taken in each book to positively show each tribe and its people and culture as survivors in the late 20th century. These books are well illustrated with photographs whenever available, avoiding the often culturally loaded images present in reproductions of paintings and drawings.

The Story of Squanto, First Friend to the Pilgrim / Cathy East Dubowski. New York: Dell Yearling, 1990. (Grades 4–8) Of the many books for children on Squanto and the Pilgrims, we finally get a historically accurate biography of the Wampanoag survivor of the village of Patuxet who was so critical in the survival of this early group of colonials. New research being done in the Massachusetts coastal area lends detail and authenticity to the Indians/Pilgrims/ Thanksgiving story that is typically couched in mythology and legend, especially in accounts for children. Nanepashemet, a Wampanoag Research Associate at Plimouth Plantation, also lent his expertise. A very well-balanced, realistic and entertaining biography. *Who Was Who in Native American History* / Carl Waldman. New York: Facts on File, 1990. (Grades 6–adult) This is a reference work that is more properly a who's who of Indian-white history—i.e. it doesn't include pre-Columbian people, giving the tired impression that Indian history doesn't begin until 1492, and it only includes people who were significant because of their interactions with white people, not those who are important to their own people. Also, the listings stop with 1900, relegating Indians to the remote past once again. Nevertheless, useful for what it does include, and cross references are very good.

A Woman of Her Tribe / Margaret A. Robinson. New York: Scribner's, 1990. (Grades 5–8) Low-key story of Annette, whose white mother moves the two of them from Annette's deceased father's Nootka village to attend a private school in Vancouver where she's received a scholarship. Annette's transition to the city and the school is handled with sensitivity and understanding. The last third of the novel deals with Annette's return to her village over the Christmas break, where she realistically confronts her confusion over being both Nootka and white, and makes decisions about where she belongs.

2. Titles to avoid:

A,B,C's: The American Indian Way / by Richard Red Hawk. Sacramento: Sierra Oaks. 1988. (Grades K–3) An unfortunate attempt to "Indianize" the usual ABC book. This version comes out over-simplified often to the point of confusion.

Black Elk: A Man with a Vision / Carol Greene. Chicago: Children's Press, 1990. (Grades 3–5) Although consistent with the material in *Black Elk Speaks*, this retelling of Black Elk's vision is so oversimplified that it sounds ridiculous and muddled. The illustrations, mostly period artwork, are poorly chosen and often have nothing to do with the text. *Drift* / William Mayne. New York: Dell Yearling, 1985. (Grades 4–7) A stranded-in-the-wilderness tale about white teen Rafe and Indian teen Tawena. Indian characters are grunting savages, even though Mayne has attempted to present a "sympathetic" treatment of the Indians and their concept of nature. Time period, place and Indians involved are unknown, and the storyline is rather murky. Mr. Mayne and the author of *Indian in the Cupboard* are from England. In general, books featuring Native peoples



written by British authors tend to be full of quaint stereotypes and misperceptions.

False Face / Welwyn Wilton Katz. New York: M.K. McElderry Books, 1988. (Grades 6–9) An exciting and well-told story of a white female teen (Lonny) and a mixed-blood male teen (Tom) who accidentally unearth an old Iroquois false face mask. However, the portrayal of the Iroquois and nonsense presented about the mask are way off base and very insulting. The author is obviously familiar with the locale of the story, and places on the Six Nations Reserve in Ontario are accurately described. However, this is a clear example of the phrase "a little knowledge is a dangerous thing". Katz conjures up a ridiculously evil power that is supposed to inhabit the false face mask and alter the personalities of characters who attempt to possess the mask. This goes beyond the wild fantasies of a creative author. False face masks are an integral part of traditional Iroquois religion practiced today on the very reserve that Katz describes so well. Her description of the mask as an absolute evil amounts to religious intolerance and goes far in fostering the conception of native, non-Christian religions as savage pagan rituals. A very harmful book.

Full Moon: Indian Legends of the Seasons / Lillian Budd. Chicago: Rand McNally, 1971. (Grades 4–6) Budd has written these legends apparently without consulting any Native Americans. The stories are contrived and do not distinguish themselves as being from any particular culture let alone of general Native American origin.

Indian Campfire Tales: Legends about the Ways of Animals and **Men** / W.S.

Phillips. New York: Platt & Munk, 1963. (Grades 3–5) This is an example of the legion of collections of generic "Indian legends" that have been published over the years. What Phillips has compiled is a mishmash of tales of unknown origin. No effort was made to identify the source of the stories or the people who created them. The reader is led to believe that one "Indian" legend is about the same as any other. This is why children come in to libraries looking for information on "Indians" instead of on the Lakota or the Oneida or the Choctaw. The illustrations are based largely on pictographs and rock paintings that have no relation to the stories being told. The introduction claims that "the stories are histories of the tribes", which makes no sense in the context of this book. *Indian in the Cupboard* / Lynn Reid Banks. Garden City, NY: Doubleday, 1980. Also the sequels *Return of the Indian* and *The Secret of the Indian*. To repeat the criticisms of the introduction, these are classic examples of highly acclaimed books riddled with horrendous stereotypes of Native Americans. Banks has created her "Indian" character from the mixed bag of harmful clichés so common among British authors. These books are perfect examples of what to avoid.

The Legend of Jimmy Spoon / Kristiana Gregory. San Diego: Harcourt Brace Jovanovich, 1990. (Grades 4–8) Based on a true incident, this novel of a twelve year old Mormon boy taken to be the adopted brother of historical Chief Washakie is a mixture of historical accuracy and silly stereotype and ignorance. Use of the word "papoose" is constant, and Jimmy is continually harassed by the Shoshone about being white, even after two years of living with these people. This flies in the face of accounts of actual treatment of white adoptees. Several incidents of violence towards women and children have no basis in tribal cultures, and ring very false, as does much of the dialogue, which careens between "noble savage" stereotypes and modern English. Guess who speaks which?

The Night the White Deer Died / Gary Paulsen. New York: Delacorte Press, 1990. (Grades 6–10) A rather murky, New Age type of story about Janet, a loner who dreams of a highly romanticized encounter with a handsome young Indian hunter (the "Noble Savage" stereotype) shooting a white deer. She comes to realize that the old drunken Indian she has seen in the marketplace is the man in the dream. Although beautifully written, especially the imagery and descriptions of the town and the surrounding geography, the Indian man and a Chicano schoolmate are very shallowly drawn.

Ten Little Rabbits / Virginia Grossman. San Francisco: Chronicle Books, 1991. (Picture book) A twist on the counting book theme featuring rabbits dressed as "Indians" and involved in "Indian" activities. Although the illustrations are beautiful, the messages conveyed are confusing. Each page shows the rabbits/Indians dressed in the manner of a different tribe, but this isn't explained until the end of the book, in an afterward. The impression given is one of generic "Indianness", and once again animals "become" Indians simply by putting on certain articles of clothing, relegating an entire race to the status of a role or profession.



Wigwam and Warpath: Minute Stories of the American Indian /

Isabel Jurgens. New York: Grosset & Dunlap, 1936. (Grades 5–8) Although this book provides biographical sketches of lesser known Native Americans, it is laden with condescending overtones and inaccurate information. Clearly not written by someone close to the subject. ...

4. Where to find books on Indians:

This is really a two-part issue, dealing with Indian publishers and authors, and with distributors who carry a large inventory of "Indian" titles. The latter can often carry the bad as well as the good, but their catalogs are useful for selection and acquisition. Also, unless specifically indicated, books are generally for an adult audience, but often have a section of children's books. Again, this is only a sampling.

Akwesasne Notes, Mohawk Nation, via Rooseveltown, NY 13683. This is the longest running Indian newspaper around today, covering indigenous issues of the Americas and the world. They have published several books, and carry a small number of titles from other publishers. Occasional book reviews. The newspaper itself is worth a subscription.

Canyon Records, 4143 North 16th Street, Phoenix, AZ 85016. Although there are a number of sources for Indian music, Canyon Records is by far the largest, with a huge inventory. They also have a pretty large list of books for distribution.

Children's Book Press, 1461 Ninth Avenue, San Francisco, CA 94122.
Harriet Rohmer publishes a book series called Fifth World Tales, featuring strikingly illustrated bilingual stories for children from the different ethnic groups in this country. Several Latin American Native peoples are represented, such as the Miskito of Nicaragua, but the book to get is Simon Ortiz' *The People Shall Continue*, already discussed above.
Indian Historian Press, 1493 Masonic Avenue, San Francisco, CA 94117.
Formerly publishers of the only magazine for children by Native Americans, "The Weewish Tree", the newspaper "Wassaja" and the scholarly journal "The Indian Historian" (all defunct), this Indian-run educational publishing house features materials for children.

Iroqrafts, RR#2, Ohsweken, Ontario, Canada NOA 1M0. This is an Iroquois-run craft mail order house that carries a very large inventory of titles on Native peoples, with an emphasis on the Iroquois and other eastern Canadian groups. They even do their own reprinting of important works. **Native American Authors Distribution Project,** The Greenfield Review Press, 2 Middle Grove Road, P.O. Box 308, Greenfield Center, NY 12833. This project, run by Joseph Bruchac, combines both parts of this issue: all of the books are by Native authors, and the Project is a distributor for many small presses.

Oyate, 2702 Mathews Street, Berkeley, CA 94702. These folks are the publishers of Books Without Bias, and sell many of the books recommended in that bibliography. Write for their price list of available titles.

Theytus Books, Ltd., Box 218, Penticton, British Columbia V2A 6K3 Canada. A Canadian Native-run publishing house, featuring children's and young adult novels.

Western Trading Post, P.O. Box 9070, 32 Broadway, Denver, CO 80209. A very large craft house of materials used by Indian people, run by non-Indians. They have quite a large section of books and music in their catalog.

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Appendix D: References and Resources

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Additional Internet Resources

1. Nutrition Fun for Kids

http://nutritionforkids.com/kidactivities.htm

2. American Diabetes Association Virtual Grocery Store

http://vgs.diabetes.org/homepage.jsp?WTLPromo=NUTRITION_vgs&vms=196528892522

The Virtual Grocery Store provides information about healthful food choices and meal planning.

3. American Library Association: Serving Native American Youth

http://www.ala.org/ala/alsc/alscresources/forlibrarians/servingnatamer/servingnative.htm

Provides information resources on serving Native American and First Nation youth populations in libraries.



4. Captive Kids: A Report on Commercial Pressures on Kids at School

http://www.consumersunion.org/other/captivekids/index.htm

This follow-up report looks at the growing stream of commercial messages reaching today's children at school.

5. Smart-Mouth.org

http://www.cspinet.org/smartmouth/index1.html

Smart-Mouth.org has games with a disintegrating face, a slick character that exposes how the food industry's drive for profit affects what we eat, a calorie meter that helps us see how our favorite foods stack up, and other surprising information about what we eat.

6. Science: Through Native American Eyes

http://www.cradleboard.org/2000/cd.html

Students and teachers now can learn unexpected things about America's first cultures at the same time as doing their required science lessons, applying their computer skills, and having fun.

7. My Body: Digesting Food

http://www.kidcyber.com.au/topics/bodydigest.htm

8. Healthy Habits for Healthy Kids: A Nutrition and Activity Guide for Parents http://www.eatright.org/ada/files/wellpoint.pdf

9. Media-Smart Youth: Eat, Think, and Be Active

http://www.nichd.nih.gov/msy/

Media-Smart Youth: Eat, Think, and Be Active! is an interactive after-school education program for young people ages 11 to 13. It is designed to help teach them about the complex media world around them, and how it can affect their health—especially in the areas of nutrition and physical activity.

10. Food Smarts: Understanding Food Labels

http://pbskids.org/itsmylife/body/foodsmarts/article4.html

11. The ABC's of Teaching Nutrition to Your Kids

http://www.askdrsears.com/html/4/T040200.asp

Appendix E: About the Artists

About the *Woodlands Food Circle* Artist, Adrian Abbott

Adrian is a member of the Kaweah Indian Nation (KIN) from San Jose, California. After marrying and moving to Grand Rapids, Minnesota, she earned an AAS degree in business at Itasca Community College in 1983. During this time, Adrian became the mother of a daughter and two sons. She now has two granddaughters and four grandsons.

In August of 1997, Adrian and her children moved to Marquette in Michigan's Upper Peninsula, where she worked and continued raising her family as a single mother. She also was active in several volunteer programs, including Habitat for Humanity, and took classes at Northern Michigan University, earning certifications in criminal justice and nursing. She married William Abbott, a Keweenaw Bay Ojibwa (KBIC) tribal member, in July 1999, and the family relocated to Baraga just over a year later.

Adrian says, "Once we moved to Baraga, I wanted to become involved with the community. I felt that the best way for me to do this was to return to school, where I can fulfill my dreams. Continuing my education has always been the strongest way to influence my family and friends to continue learning."

Adrian successfully completed two years of college work at Keweenaw Bay Ojibwa Community College, focusing on Native American studies. In January of 2003, Adrian was diagnosed with type 2 diabetes and faced a new set of challenges as she adapted her lifestyle to control her blood sugar and maintain a healthy balance. She now lives on tribal trust lands in Marquette where she continues to pursue a bachelor's degree in Native American studies at Northern Michigan University and works with the KBIC health department as a medical transport driver.

About her art, Adrian says, "Throughout my lifetime I have always gotten involved with causes that I feel would improve not just my life, but also the lives of others. I like to let my artwork speak for me. It is my way of saying Meg'wetch (Thank you) to my teachers who have encouraged me to share my hidden talents with you."

About the Artist and Illustrator Cory Fountaine

Cory Fountaine is a member of the Keweenaw Bay Indian Community and a student at Keweenaw Bay Ojibwa Community College. He also studies as a *Mide* initiate and has served as firekeeper for the Mide Lodge and Keweenaw Bay Pow Wow. He says, "My main reason for attending college here was to learn about my heritage and culture. Whenever possible, I extend my knowledge to the community, in most cases by using my abilities as an artist. For example, while working with the Keweenaw Bay Indian Community Youth Center, I involved our area youth in the arts. One of our projects was painting a mural in the youth center to show the Ojibwe and English names of animals, and the kids had their hands in painting everything."

Cory has enjoyed drawing and painting as long as he can remember. Although he's been able to use his artistic talent in the community, finding a career as an artist has been more challenging. Cory's work illustrating the traditional stories used in *Health Is Life in Balance* has been one of the experiences that helped him find a path toward that goal.

Cory plans to start work toward a bachelor of fine arts degree in illustration at Northern Michigan University. He will be taking a minor in Native American studies. After college, he envisions working in concept design or storyboarding. Cory hopes to continue to serve as a role model for youth in the community, encouraging them to develop their talents and pursue their dreams: "After designing imaginative creations for the community, and local businesses, and friends, I have decided to work more to further my abilities in the arts. The possibilities are endless when restrictions are only created by imagination."

About the Artist and Illustrator Loren Youngman

Loren is a 23-year-old male who lives in Poplar, Montana. He is of Sioux Indian descent from the Fort Peck Assiniboine and Sioux Tribes in Northeastern Montana. Loren was raised by his grandparents, Floyd and Coretta Youngman, and learned his Sioux language in the home. His grandfather, Floyd, was a well-respected medicine man who practiced his traditional ways and conducted Sun Dance ceremonies for many years on the reservation. From his grandfather, Loren was taught his cultural ways of living and his artwork reflects insight into that upbringing.

From his grandmother, Coretta, Loren acquired the gentleness and affection for his family as well as an inherent responsibility to support them. Although his grandparents have passed to the other side, Loren continues his traditional ways of living and keeps his obligations to his family.

Since the age of 8 years, Loren knew he wanted to be an artist and his talent flourished within him during his early school years. He's known locally for his beautiful drawings and paintings among his tribal membership on the Fort Peck Indian Reservation. His goal was, and still is, to attend an art institute, but his commitment to his family is his highest priority. Loren has utilized his natural gift to help support his family and presently chooses to stay home where he raises his child until such time as he and his family can leave the reservation so that he can attend an art school.