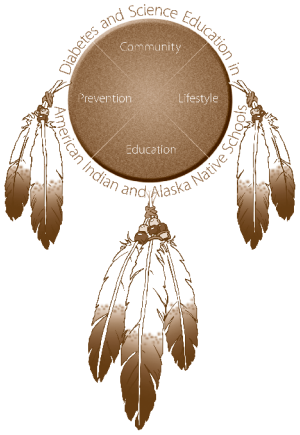
7 – 8 Social Studies



DIABETES EDUCATION
IN TRIBAL SCHOOLS

Life in Balance

Department of
Health & Human Services
USA

NATIONAL INSTITUTES OF HEALTH

NIDDK | NATIONAL INSTITUTE OF DIABETES AND DIGESTIVE AND KIDNEY DISEASES

CDC
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Leech Lake Tribal College · Northwest Indian College
Southwestern Indian Polytechnic Institute · Stone Child College

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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

Table of Contents

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.

2. 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).

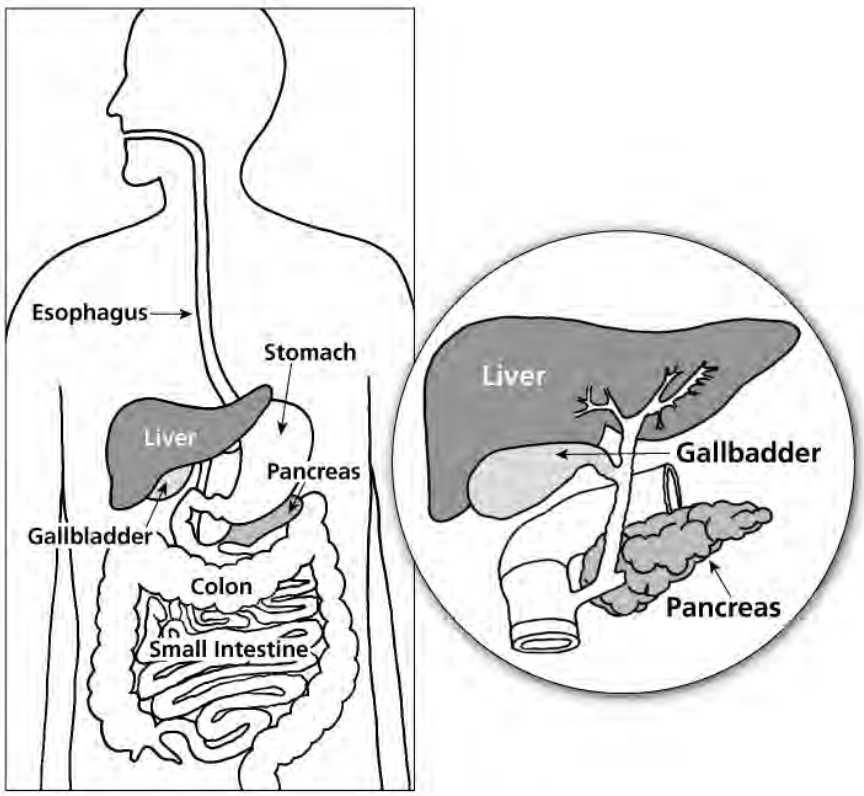


Figure I1:
Digestive tract and pancreas.

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.

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 I2:
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.

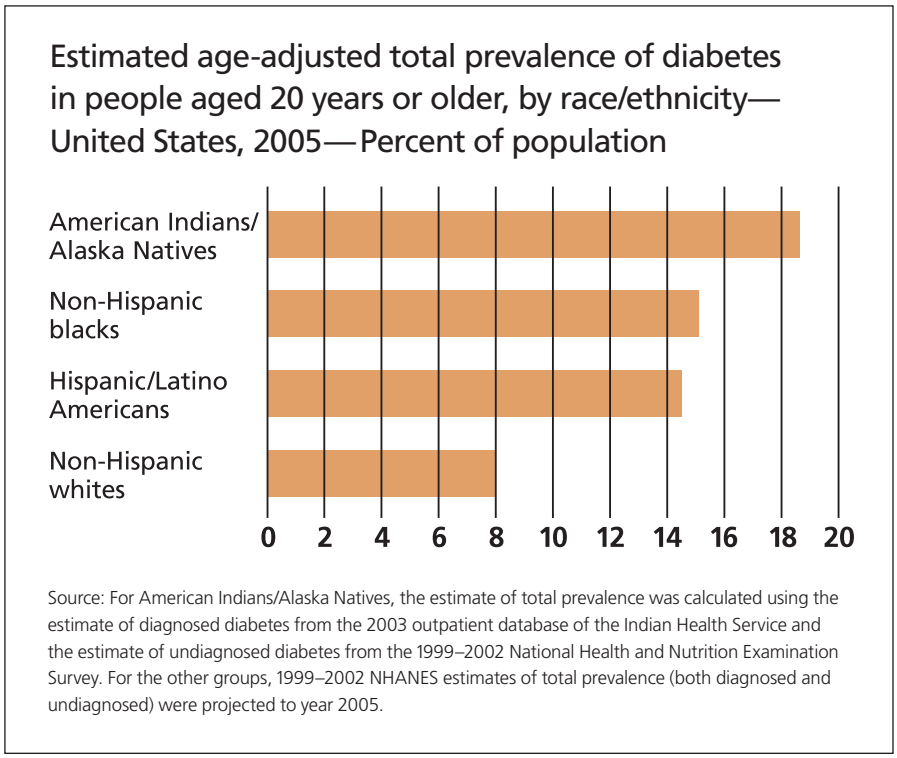
Who Gets Diabetes?

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 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.)

Figure I3:
Prevalence data.



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.

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.

Figure I4:
Keeping track of glucose levels.
Source: National Institute of Diabetes and Digestive and Kidney Diseases, National Institutes of Health.

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 I5:
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 pre-diabetes, 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 questions must be accessible and manageable, as well as appropriate to 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 Self-Direction Direction from Teacher or Material			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 explanations 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 communicates 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 *x*? How would you explain *x*?	■ 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 I7:
BSCS Instructional Model: What the Teacher Does.

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 I8:
BSCS Instructional Model: What the Student Does.

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 pre-diabetes) 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.

Grades 7–8

Life in Balance

Unit Overview

The Diabetes Education in Tribal Schools (DETS 7–8) Social Studies Unit, *Life in Balance*, consists of four lessons that can be completed in approximately six class periods. The overall goal of this unit on diabetes is to help prevent the onset of type 2 diabetes among the American Indian and Alaska Native populations. Students learn the following big ideas:

- Civic responsibility is highly regarded in American Indian and Alaska Native cultures.
- Health is a community goal that requires their attention and action.
- Health is life in balance.
- Risk factors help predict who might develop diabetes, and some of these relate to lifestyle.
- Communities have resources that can help people prevent or delay the onset of diabetes.
- The risk of developing type 2 diabetes can be reduced by making changes in lifestyle.
- They can help educate and encourage community efforts to prevent type 2 diabetes.

Enduring Understandings for the Unit

By the end of this unit, students should be able to understand the following:

- Health can be defined as life in balance.
- The Circle of Balance includes four equal components.
- Communities and individuals seek balance in all four components to be healthy.
- There are risk factors that increase one's risk of getting type 2 diabetes.
- Diabetes prevention involves making lifestyle choices that restore balance.
- Community members need information about type 2 diabetes prevention to help them make better choices.
- It is a civic responsibility to help the community work toward balance and prevent type 2 diabetes.

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.

5–8 Specific Goals

1. Describe lifestyle in terms of dietary patterns, physical activity levels, and personal choices.
2. Describe the environment in terms of external factors such as physical surroundings and social organization.
3. Describe how lifestyles and the environment change over time.
4. Explain how lifestyle choices can lead to balance or imbalance.
5. Describe how healthy choices can prevent or delay the onset of type 2 diabetes.

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.

5–8 Specific Goals

1. Identify lifestyle changes that would improve or maintain personal health and the health of families and communities.
2. Identify environmental changes that would improve or maintain personal health and the health of families and communities.

3. Identify healthy choices on a personal, family, and community level that can prevent or delay the onset of diabetes.

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.

5–8 Specific Goals

1. Introduce students to various health and science professions and career opportunities.
2. Identify educational paths for becoming health and science professionals.

Correlation with the National Standards

Curriculum Standards for Social Studies

This unit on diabetes supports teachers in their efforts to reform education in the spirit of the National Council for the Social Studies's 1994 *Expectations of Excellence: Curriculum Standards for Social Studies*. The content of these lessons is explicitly standards based. The following chart on the next pages lists the specific content standards that this unit addresses.

Content Standards: Middle Grades

Thematic Strand 1: Culture Social studies programs at the middle grade level should include experiences that provide for the study of culture and cultural diversity, so that the learner can:	**Correlation with the DETS 7–8 Social Studies Unit**
■ explain how information and experiences may be interpreted by people from diverse cultural perspectives and frames of reference.	Lessons 1, 2, 3, 4
■ explain and give examples of how language, literature, the arts, architecture, other artifacts, traditions, beliefs, values, and behaviors contribute to the development and transmission of culture.	Lesson 1
■ explain why individuals and groups respond differently to their physical and social environments and/or changes to them on the basis of shared assumptions, values, and beliefs.	Lesson 1
Thematic Strand 2: Time, Continuity, and Change Social studies programs at the middle grade level should include experiences that provide for the study of the ways human beings view themselves in and over time, so that the learner can:	
■ use knowledge of facts and concepts drawn from history, along with methods of historical inquiry, to inform decision-making about and action-taking on public issues.	Lessons 1, 2, 3, 4
■ identify and use key concepts such as chronology, causality, change, conflict, and complexity to explain, analyze, and show connections among patterns of historical change and continuity.	Lessons 1, 2, 3, 4
Thematic Strand 3: People, Places, and Environments Social studies programs at the middle grade level should include experiences that provide for the study of people, places, and environments so that the learner can:	
■ propose, compare, and evaluate alternative uses of land and resources in communities, regions, nations, and the world.	Lessons 3, 4
Thematic Strand 4: Individual Development and Identity Social studies programs at the middle grade level should include experiences that provide for the study of individual development and identity, so that the learner can:	
■ relate personal changes to social, cultural, and historical contexts.	Lessons 1, 2, 3, 4
■ describe personal connections to place—as associated with community, nation, and world.	Lessons 1, 2, 3, 4
■ describe the ways family, gender, ethnicity, nationality, and institutional affiliations contribute to personal identity.	Lessons 1, 2, 3, 4
■ relate such factors as physical endowment and capabilities, learning, motivation, personality, perception, and behavior to individual development.	Lessons 1, 2, 3, 4
■ identify and describe ways regional, ethnic, and national cultures influence individuals' daily lives.	Lessons 1, 2, 3, 4
■ identify and describe the influence of perception, attitudes, values, and beliefs on personal identity.	Lesson 1
■ work independently and cooperatively to accomplish goals.	Lessons 1, 2, 3, 4

Thematic Strand 5: Individuals, Groups, and Institutions Social studies programs at the middle grade level should include experiences that provide for the study of interactions among individuals, groups, and institutions so that the learner can:	**Correlation with the DETS 7–8 Social Studies Unit**
■ describe the role of institutions in furthering both continuity and change.	Lessons 3, 4
■ apply knowledge of how groups and institutions work to meet individual needs and promote the common good.	Lessons 3, 4
Thematic Strand 6: Power, Authority, and Governance Social studies programs at the middle grade level should include experiences that provide for the study of how people create and change power, authority, and governance, so that the learner can:	
■ examine persistent issues involving the rights, roles, and status of the individual in relation to the general welfare.	Lessons 1, 2, 3, 4
Thematic Strand 7: Production, Distribution, and Consumption Social studies programs at the middle grade level should include experiences that provide for the study of how people organize for the production, distribution, and consumption of goods and services, so that the learner can:	
■ explain and illustrate how values and beliefs influence different economic decisions.	Lessons 3, 4
Thematic Strand 8: Science, Technology, and Society Social studies programs at the middle grade level should include experiences that provide for the study of relationships among science, technology, and society, so that the learner can:	
■ examine and describe the influence of culture on scientific and technological choices and advancement.	Lessons 1, 2, 3, 4
■ show through specific examples how science and technology have changed people's perceptions of the social and natural world, such as in their relationship to the land, animal life, family life, and economic needs, wants, and security.	Lessons 2, 3, 4
■ describe examples in which values, beliefs, and attitudes have been influenced by new scientific and technological knowledge.	Lesson 2
Thematic Strand 10: Civic Ideals and Practices Social studies programs at the middle grade level should include experiences that provide for the study of the ideals, principles, and practices of citizenship in a democratic republic, so that the learner can:	
■ practice forms of civic discussion and participation consistent with the ideals of citizens in a democratic republic.	Lessons 1, 2, 3, 4
■ examine strategies designed to strengthen the "common good," which consider a range of options for citizen action.	Lessons 3, 4
■ locate, access, analyze, organize, and apply information about selected public issues.	Lessons 1, 2, 3, 4

Source: National Council for the Social Studies. (1994*). Expectations of excellence: Curriculum standards for social studies.* Silver Springs, MD: Author.

Teacher Strategies

Timeline for the Lessons

The timeline provides a guideline for completing the four lessons in this unit. The lessons will require five to six 45-minute class periods. The 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. If your class periods are either shorter or longer than 45 minutes, you will need to adjust your schedule accordingly.

Lesson 1, *Civic Action and Health*: 1–2 class periods

Lesson 2, *Helping Our Town*: 1 class period

Lesson 3, *A Community Seeks Balance*: 1 class period

Lesson 4, *Your Community Needs You*: 2 class periods

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

2–3 Weeks Ahead

Begin reviewing lessons.

(Optional) Conduct research (by talking to community members or through online searches) to find a quote by a past or present local tribal leader about responsibility toward others. See Lesson 1.

Learn about any current civic actions underway in the community—especially ones that are successful and involve young citizens (see Lesson 1).

Research how your local tribal culture uses circles as symbols (see Lesson 1).

1 Week Ahead

Make photocopies and transparencies.

Gather necessary materials.

Teacher Materials for the Unit

overhead projector

transparency pens or markers

transparency copies of each of the following:

- Copymaster 1.1, *Words of Wisdom*
- Copymaster 1.2, *Health Concept Map*

- Copymaster 1.3, *Circle of Balance*
- Copymaster 1.4, *Lifestyle Concept Map*
- Copymaster 1.6, *Our Role Models for Balance*

1 copy of Copymaster 1.5, *Lifestyle Choices of a Role Model for Balance*

1 copy of Copymaster 1.8, *Lesson 1 Quiz—Answer Key* (optional)

1 transparency copy of Copymaster 2.2, *Lifestyle Findings about Our Town*

1 copy of Copymaster 2.3, *Lifestyle Findings—Possible Answers*

1 copy of Copymaster 2.5, *Lesson 2 Quiz—Answer Key* (optional)

1 copy of Copymaster 3.3, *Diabetes Findings—Possible Answers*

1 transparency copy of Copymaster 3.4, *Prevalence of Diabetes by Race and Ethnicity*

1 copy of Copymaster 3.6, *Lesson 3 Quiz—Answer Key* (optional)

1 transparency copy of Copymaster 4.1, *Type 2 Diabetes Prevention Poster*

1 copy of Copymaster 4.3, *Lesson 4 Quiz—Answer Key* (optional)

Student Materials for the Unit

For each student

poster board

old magazines

markers

glue

colored pencils

scissors

tape

1 copy of Copymaster 1.1, *Words of Wisdom*

1 copy of Copymaster 1.3, *Circle of Balance*

1 copy of Copymaster 1.4, *Lifestyle Concept Map*

1 copy of Copymaster 1.5, *Lifestyle Choices of a Role Model for Balance*

1 copy of Copymaster 1.7, *Lesson 1 Quiz* (optional)

1 copy of Copymaster 2.1, *Getting to Know Our Town*

1 copy of Copymaster 2.2, *Lifestyle Findings about Our Town*

1 copy of Copymaster 2.4, *Lesson 2 Quiz* (optional)

1 copy of Copymaster 3.1, *Type 2 Diabetes Information*

1 copy of Copymaster 3.2, *Diabetes Findings about Our Town*

1 copy of Copymaster 3.5, *Lesson 3 Quiz* (optional)

1 copy of Copymaster 4.1, *Type 2 Diabetes Prevention Poster*

1 copy of Copymaster 4.2, *Lesson 4 Quiz* (optional)

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, this unit 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.

This unit includes short, optional quizzes that can be given at the end of each lesson. These quizzes focus on the major points that students should know when they complete the lesson. The quizzes are found on copymasters. For each quiz, there is one copymaster for the quiz that can be photocopied for students and one copymaster that serves as an answer key. These quizzes are another way to monitor students' understanding at different points in the unit.

Finally, some teachers may wish to use an end-of-unit quiz to assess students' understanding of the ideas and concepts. The accompanying Teacher Resource CD-ROM (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.

Student Lessons

Lesson 1
Civic Action and Health

At a Glance

Overview

Lesson 1, *Civic Action and Health*, consists of two activities and takes approximately one to two class periods to complete. Students read inspirational quotes from Native Americans calling for civic responsibility and civic action. Students then list the goals of their community, with the goal of improving health as the focus. Students use the Circle of Balance—a culturally based model—to define health as life in balance. To better understand the Circle of Balance, they consider the lifestyle choices of role models in their community.

Enduring Understandings

- Health can be defined as life in balance.
- The Circle of Balance includes four equal components: physical, mental, spiritual, and emotional.
- Communities and individuals seek balance in all four components to be healthy.
- Citizens have a responsibility to help their community reach their goals.

Teacher Background

Consult the *Life in Balance* section in *Introductory Information*.

Outcomes and Indicators of Success

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

1. define "civic responsibility" and "civic action."

They will demonstrate their ability by listing examples of community goals.

2. state that lifestyle is a series of behavior choices made by individuals.

They will demonstrate their ability by

- listing the lifestyle choices of a role model,
- providing examples of lifestyle choices that lead to balance, and
- explaining how lifestyle choices affect various parts of the Circle of Balance.

3. define health as life in balance.

They will demonstrate their ability by

- identifying the four equal components of the Circle of Balance: physical, mental, spiritual, and emotional and
- defining balance as harmony in all four components of the Circle of Balance.

In Advance

Teacher Materials

overhead projector

transparency pens or markers

transparency copies of each of the following:

- Copymaster 1.1, *Words of Wisdom*
- Copymaster 1.2, *Health Concept Map*
- Copymaster 1.3, *Circle of Balance*
- Copymaster 1.4, *Lifestyle Concept Map*
- Copymaster 1.6, *Our Role Models for Balance*

1 copy of Copymaster 1.5, *Lifestyle Choices of a Role Model for Balance*

1 copy of Copymaster 1.8, *Lesson 1 Quiz—Answer Key* (optional)

Student Materials

For each student

1 copy of Copymaster 1.1, *Words of Wisdom*

1 copy of Copymaster 1.3, *Circle of Balance*

1 copy of Copymaster 1.4, *Lifestyle Concept Map*

1 copy of Copymaster 1.5, *Lifestyle Choices of a Role Model for Balance*

1 copy of Copymaster 1.7, *Lesson 1 Quiz* (optional)

Preparation

For Activity 1, Step 2, you may wish to find a quote from a local tribal leader (past or present) or an elder that can be added to the discussion about Copymaster 1.1, *Words of Wisdom*. The quote should emphasize responsibility toward others. Before class begins, write the quote on the board or on a piece of chart paper that can be posted on the wall.

For Step 6, it may be helpful to find some civic actions that are under way in your community—especially examples that are successful and involve young citizens.

Research how your local tribal culture uses circles as symbols. In Activity 2, students relate their culture's traditional use of circles to the Circle of Balance and health. You may want to create a transparency depicting a locally significant circle symbol to show students in Step 2.

Process and Procedure

Activity 1: Words of Wisdom

1. **Display a transparency of Copymaster 1.1, *Words of Wisdom*, and hand out a copy to each student.**
2. **Tell students that while the quotations are from people of different tribes and different times, they all have a common message. Read through the quotes as a class. Ask students to listen for the message.**

   You may want to have a different student read each quote. If you have a quote from a local tribal leader or elder written on the board or chart paper, point it out to students and ask a student to read that quote as well.

3. Ask, "What are the main points? What do the quotes ask us to do?"

   Encourage a variety of student responses. Key ideas that should be expressed include the following:

   - Understand our responsibility to others and our community
   - Understand the connection of all things
   - Think about future generations
   - Honor and return to tradition as a powerful tool
   - Accept responsibility
   - Work together

4. Write these terms on the board: "civic responsibility" and "civic action." Ask students what they think these terms mean.

   Have students share their possible definitions. Refine the definitions by asking if anyone has something new to add. Key responses should include ideas about the common good and a responsibility to others.

5. Write the following definitions on the board:

   - *Civic responsibility*: Our duty to act for the common good because we belong to the group.
   - *Civic action*: Things we do, or ideas we promote, for the common good.

   This terminology will be used throughout the unit.

6. Have students "brainstorm" the goals of their community—goals that the community feels a responsibility to work toward, learn about, or act on.

   Write their ideas on the board. Move through this quickly, encouraging responses without analyzing students' ideas. Some possible goals include the following:

   - Protect natural resources
   - Preserve historical resources and scenic views
   - Promote farmland preservation
   - Maintain roads
   - Improve the health of the community

Note to Teacher: *If you were able to identify some civic actions that are under way in the community (see* Preparation *section), it will be helpful to include them in your class discussion here.*

7. Ask, "Why should improving health be on the list of community goals?"

   Some ideas students might have include the following:

   - To avoid the suffering of valued family members
   - To avoid the early loss of elders and their wisdom
   - To avoid costly health care

- To reach other goals of the community by using the talents of all citizens
- To make life enjoyable

8. **Tell students that throughout this unit they, as community members, will be preparing to help the community reach their goal of improving health. Explain that citizens gather information about issues so they can help the community meet their goals. Ask, "What do you need to know to help your community improve the health of their people?"**

   Have students share a few questions or examples of what they would need to know to help the community improve health. Write them on the board. Two possible examples are a list of diseases affecting the community and a definition of health.

9. **Display a transparency of Copymaster 1.2, *Health Concept Map*. Since health is the focus, ask students to define "health" and give examples.**

   Accept and write down all answers on lines extending from the word "health." Students' answers might come in the form of examples or definitions. Respond to ideas with probing questions such as, "Why do you think this?" and "What else might be needed?"

Activity 2: Circle of Balance

1. **Tell students that they will learn a new tool for understanding health, which is based on a common symbol used in American Indian and Alaska Native cultures.**
2. **Draw a circle on the board. Ask, "How are circles used as symbols in your culture [or in other Native American cultures]?"**

   American Indian and Alaska Native cultures commonly use the circle as a metaphor. How the circle is used to depict lessons of life varies somewhat from tribe to tribe. Two examples are the Medicine Wheel (figure 1) and the Sacred Hoop. There are several teachings on the Medicine Wheel, such as the four directions (north, south, east, and west), the four colors of races (red, black, yellow, and white), or the four components of life (physical, mental, spiritual, and emotional). The Sacred Hoop comes from the American Indian belief that all things are intertwined and interrelated and all things are affected by our actions.

Figure 1:
Medicine Wheel National Historic Landmark. Bighorn County, Wyoming.
Source: Richard Collier, Wyoming State Parks and Cultural Research.

In this question, students connect with their local culture's use of circle symbolism. This local tie-in helps students grasp the idea of the Circle of Balance. Students will use the Circle of Balance to guide them

throughout this unit. Given the significance of circles in American Indian culture, point out to students that they are using tradition to give meaning and understanding to the current world.

Note to Teacher: *Research this question before teaching the lesson in case students are unsure about their local tribe's symbolism (see* Preparation *section). Allow for examples from other American Indian and Alaska Native tribes.*

3. Ask, "Why do you think circles are used rather than lines?"

   Lines have a beginning point and an end point. Circles do not; they are continuous. Lines do not show connections or cycles very well. The components of the circle are related and connected—just as elements of life are related and connected. When one part is affected, other parts are affected, too. This connectedness means we are all responsible for considering how our lifestyle affects other parts of ourselves and the world.

   In American Indian cultures, circles depict cycles: seasons, nature, and life. The circle always brings us back to where we started. At the center of the circle of life is the place of understanding oneself and our relationship to others and the world.

4. Distribute Copymaster 1.3, *Circle of Balance*, to each student. Also, display a transparency of Copymaster 1.3. Point out a new definition of health above the circle: "*health = life in balance*."

   Point out that the traditional definition of health (being sound in body, mind, or spirit) is somewhat different from this new definition. "*Health = life in balance*" represents a constant quest toward balance and harmony.

5. Explain to students that the four components or parts of the circle—physical, mental, spiritual, and emotional—must all be in balance for a person to be healthy. Ask, "What do the four parts mean to you?" Have students write their ideas on their copymasters below the Circle of Balance.

   Students will give a variety of definitions. Some possible answers include these:

   - *Physical*: Being able to move; eating healthy food
   - *Mental*: Being able to think and learn; developing skills; being curious about new ideas
   - *Spiritual*: Finding direction or purpose; connecting to nature; being concerned with religious values
   - *Emotional*: Expressing and understanding feelings; developing self-esteem

   Be sure students understand the concept of the different parts before moving on by asking questions focused on the four parts.

6. Tell students that the four parts are found in individuals, families, and communities. Each component is of equal importance and affects the other parts. Ask, "How do you think one part can affect another?"

When one part of the circle is affected, it can start a ripple effect into the other parts. If this doesn't come up in the discussion, help students work through an example that shows this. For instance, a person may participate in a traditional ceremony that involves dancing. This influences the person's spiritual aspect (the connection to life purpose through the ceremony), mental aspect (learning a new dance), physical aspect (the activity of dancing), and emotional aspect (emotions brought to the surface through the activity).

7. **Tell students they will now look more closely at the choices people make that might affect their health and the Circle of Balance.**

8. **Display a transparency of Copymaster 1.4, *Lifestyle Concept Map*, but cover the definition. Ask, "What is lifestyle?"**

Accept and write down all ideas in lines extending from "lifestyle"; move quickly through this. Answers might come in the form of examples or definitions. Some possible student answers include the following:

- How you live your life
- Choices about food and exercise
- Family life

9. **Uncover the definition and tell students, "Lifestyle is a series of behaviors and choices that are made by individuals, families, and communities."**

10. **Distribute Copymaster 1.4, *Lifestyle Concept Map*, to each student. Ask, "What are some choices related to behavior that people make?" Have students write their ideas on the copymaster.**

This statement focuses students on the objectives of the lesson. Students might describe specific choices of behavior or offer a broad definition. Some possible student answers include diet, physical activity, spiritual practices, clothing choices, and leisure activities.

11. **Read the directions on Copymaster 1.5, *Lifestyle Choices of a Role Model for Balance*. Instruct students that they will be working in teams of three to four to complete this activity.**

Read the instructions aloud before students move into their teams. Offer one example of a lifestyle choice and work through the process with the class.

12. **Ask, "What is a role model? Do you have a role model?"**

Students should understand that a role model is someone they look up to or want to be like. This activity allows students to see the wisdom that can be tapped within their communities. Their role models do not have to be perfectly in balance and healthy. In fact, this unit shows that even people who have been diagnosed with a disease like

diabetes can get on the path to balance by living a lifestyle that makes them as healthy as possible. Students do not have to identify their role model by name, but they should keep that person in mind for this activity.

13. Distribute Copymaster 1.5, *Lifestyle Choices of a Role Model for Balance*, to each student.

14. Have students move into their teams. Instruct students to complete the handout individually. After team members have finished, they can discuss their descriptions as a team to see if they have any similarities among the lifestyle choices of their role models.

Allow about 10–15 minutes for this activity. Circulate around the room to keep students on task and to answer questions.

15. Reconvene the class. Have each team share an example from their role models' lifestyle, without duplicating other examples. As they share, ask students to describe how a lifestyle behavior can affect two or more parts of the Circle of Balance. Have them give an example.

Try to be sure that students come up with examples that clarify and give more meaning to the different parts of the circle. If examples are lacking for a given part, brainstorm an example with the class. Ask what it would look like to be healthy in that part of the circle. What would they be doing or feeling?

Assessment Opportunities

Collect students' copies of Copymaster 1.5, *Lifestyle Choices of a Role Model for Balance*. Administer the optional Lesson 1 quiz (Copymaster 1.7, *Lesson 1 Quiz*).

Lesson 2
Helping Our Town

At a Glance

Overview

Lesson 2, *Helping Our Town*, consists of one activity and will take about one class period to complete. Students put their knowledge about balance and lifestyles to work to help a community seeking to improve the health of their citizens. Working in teams, students imagine they are citizens of Our Town. They analyze information about the community, their citizens' lifestyles, and the factors influencing lifestyle. Students record their observations and ideas to help the community understand the issue and work toward balance.

Enduring Understandings

- Individuals need to understand the types of things that influence their lifestyle choices.
- Challenges may come up when changing a lifestyle, but most can be overcome.
- Community resources are available to support healthy lifestyle changes.

Teacher Background

Consult the *Life in Balance* section of *Introductory Information*.

Outcomes and Indicators of Success

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

1. analyze and interpret statistics and other information.

They will demonstrate their understanding by gathering only the relevant data from a long list of facts.

2. explain how a community's lifestyle choices affect the Circle of Balance.

They will demonstrate their understanding by

- explaining how certain factors are affecting lifestyle choices in Our Town and
- showing how the factors cause a balance or imbalance in the Circle of Balance.

3. state how community resources can help support healthy lifestyle choices.

They will demonstrate their understanding by listing resources and ways a community can help their citizens make healthier choices.

4. be able to identify possible challenges to a community's citizens as they try to change their lifestyle.

They will demonstrate their ability by analyzing information about Our Town to discover the challenges to changing lifestyle choices.

In Advance

Teacher Materials

overhead projector

transparency pens or markers

1 transparency of Copymaster 2.2, *Lifestyle Findings about Our Town*

1 copy of Copymaster 2.3, *Lifestyle Findings—Possible Answers*

1 copy of Copymaster 2.5, *Lesson 2 Quiz—Answer Key* (optional)

Student Materials

For each student

1 copy of Copymaster 1.3, *Circle of Balance*, from Lesson 1

1 copy of Copymaster 2.1, *Getting to Know Our Town*

1 copy of Copymaster 2.2, *Lifestyle Findings about Our Town*

1 copy of Copymaster 2.4, *Lesson 2 Quiz* (optional)

Process and Procedure

1. Ask students to share what they have learned so far about health and lifestyles.

Students should note that health is life in balance. They should also explain that lifestyle choices affect balance. Students might also provide examples of lifestyle choices (diet, exercise, entertainment, etc.). Write significant points on the board.

2. Ask, "What did the Circle of Balance show us?"

The Circle of Balance can be a guide to healthy choices. Students should recall that balance involves four components: physical, mental, spiritual, and emotional. Each component can have an effect on another.

3. Tell students they will be helping a community that wants to improve the health of their citizens. Students will become citizens of Our Town and join a health committee.

Our Town citizens know they have a civic responsibility to help their community reach their goal of improving health. The students will be serving on a health committee that will look at information about Our Town. Working in teams, they will make some important observations that will help the community move toward their goal of improving health. This activity leads into Lesson 3, *A Community Seeks Balance*.

4. Explain that the students' first task is to evaluate Our Town. Information is available to them about the following things:

- **General information about the community**
- **Their citizens' lifestyles**
- **The factors that affect lifestyle choices**

Part of this exercise involves figuring out what is influencing the community's lifestyle choices. It could be a lack of education or the presence of something negative (such as soda vending machines in the school). It could be a lack of resources. It could also be that resources exist in this community, but they could be used more effectively.

Understanding these influences will provide the focus for the community's diabetes prevention efforts in the next lesson.

5. Distribute Copymaster 2.1, *Getting to Know Our Town*, and Copymaster 2.2, *Lifestyle Findings about Our Town*, to each student.
6. Tell students that they will work in teams to read the community information and record their findings on Copymaster 2.2. Review rules for working teams. Let students know that you will ask them to report their findings to the class.
7. Instruct students to use Copymaster 1.3, *Circle of Balance*, for this exercise.

   Allow about 20–25 minutes for group work. Rotate around the room to monitor students' progress and to answer questions.
8. Reconvene the class. Display a transparency of Copymaster 2.2, *Lifestyle Findings about Our Town*. Ask each team to share one of their findings and record each on the transparency, allowing all teams to share.

   Keep this moving by asking teams to contribute only new ideas not yet mentioned. Be sure all teams contribute. Use Copymaster 2.3, *Lifestyle Findings—Possible Answers*, as a guide to possible student observations.

Assessment Opportunities

Collect students' completed copies of Copymaster 2.2. Administer the optional quiz for Lesson 2 (Copymaster 2.4, *Lesson 2 Quiz*).

Lesson 3
A Community Seeks Balance

At a Glance

Overview

Lesson 3, *A Community Seeks Balance*, consists of two activities and takes one class period to complete. In this lesson, students identify diabetes prevention as a specific community health goal. They work in teams to learn more about the latest research and statistics on type 2 diabetes. Students record what they have learned for later use in Lesson 4, *Your Community Needs You*.

Enduring Understandings

- The number of children and American Indians with type 2 diabetes is rising.
- There are risk factors that increase one's risk of getting type 2 diabetes.
- There are complications for a person's health and life if a person has type 2 diabetes.
- Type 2 diabetes is preventable.
- Diabetes prevention involves making lifestyle choices that restore balance.

Teacher Background

Consult the *Overview of Diabetes* and *Life in Balance* sections of *Introductory Information*.

Outcomes and Indicators of Success

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

1. define and analyze type 2 diabetes.

They will demonstrate their understanding by

- applying diabetes risk factors to Our Town and
- recognizing that lifestyle choices can prevent diabetes.

2. use the Circle of Balance to guide them in lifestyle choices to prevent type 2 diabetes and restore balance.

They will demonstrate their ability by

- deciding which segments are not in balance,
- identifying lifestyle changes to bring the components back in balance, and
- recognizing that restoring balance can help prevent type 2 diabetes.

3. use their prior knowledge of Our Town to analyze their community's lifestyles.

They will demonstrate their ability by

- analyzing their community's lifestyles,
- recognizing the challenges to a healthy lifestyle in their community, and
- listing community resources available to help with life in balance goals.

In Advance

Teacher Materials

overhead projector

transparency pens or markers

1 copy of Copymaster 3.3, *Diabetes Findings—Possible Answers*

1 transparency copy of Copymaster 3.4, *Prevalence of Diabetes by Race and Ethnicity*

1 copy of Copymaster 3.6, *Lesson 3 Quiz—Answer Key* (optional)

Student Materials

For each student

1 copy of Copymaster 1.3, *Circle of Balance*, from Lesson 1

1 copy of Copymaster 2.1, *Getting to Know Our Town*, from Lesson 2

1 copy of Copymaster 3.1, *Type 2 Diabetes Information*

1 copy of Copymaster 3.2, *Diabetes Findings about Our Town*

1 copy of Copymaster 3.5, *Lesson 3 Quiz* (optional)

Process and Procedure

Activity 1: Diabetes and Our Town

1. Tell students that today they will begin to focus on a particular health issue that Our Town needs to address.
2. Write on the board, "*Our Town Daily* newspaper: 'Rate of Diabetes Soars.' " Ask the students to raise their hands if they know anyone who has diabetes.

   With the rapid increase in diabetes diagnoses, it is likely that many, if not all, students will know someone with diabetes. This simple show of hands will bolster the reasoning behind looking into this issue.
3. Ask, "What do you already know about diabetes?" List students' responses on the board.

   Encourage responses from students by using phrases such as, "Good" and "What else?"
4. Tell students that they will need more information about diabetes to help Our Town reach their goal of improving health. Ask, "Are there any particular things you need to know about diabetes to help the community?"

   Allow students to share a few questions about diabetes that come to mind. Explain that students will use a fact sheet to answer some of their questions.
5. Distribute Copymaster 3.1, *Type 2 Diabetes Information*, to each student. Tell students they will use this information sheet to analyze Our Town's diabetes risk.

6. Distribute Copymaster 3.2, *Diabetes Findings about Our Town*. Have students work in teams of three to four to answer the questions.

   Allow 20–25 minutes for students to record their findings. Circulate around the room to assist students and keep them on task. Remind students to use Copymaster 2.1, *Getting to Know Our Town*, to help them with this step.

7. Have students share their answers and ideas with the class.

   Gauge how much class time is needed to review what was learned about diabetes by listening to teams as they work. Focus on any questions that seemed particularly challenging or those that sparked discussion during group work.

Activity 2: Diabetes Trends

1. Display a transparency of Copymaster 3.4, *Prevalence of Diabetes by Race and Ethnicity*. Ask the students to describe what they see on the graph and what they think it means.

   Initially, accept most answers as students gain confidence in interpreting graphs. Ask probing questions as needed to guide the students to the correct interpretation of the graph.

2. Be sure that students now understand that the graph shows that American Indians and Alaska Natives are at greater risk of developing type 2 diabetes than other ethnic groups.

3. Ask, "Do all tribal people get diabetes?"

   Students need to know that not all American Indian people get diabetes and that this is not "fate." The present overall rate is about 17 percent. While this is a lot of people, it is not everyone. The prevalence of diabetes appears to be increasing (although this is not represented on this graph). The continued increase is of great concern—the trend toward more tribal people with type 2 diabetes.

4. Ask, "What do you think is happening here? Why do you think there has been an increase in the percentage of American Indians with diabetes?"

   There is more than one theory about why there has been a dramatic increase in diabetes. Current research centers on the risk factors, along with a focus on changes in diet and exercise.

5. Tell students to work in their teams to create a list of possible reasons for the increase of type 2 diabetes in the community, focusing on what they have learned about lifestyle and balance.

   Students should use information from the diabetes fact sheet (Copymaster 3.1) and previous lessons. Allow about 5 minutes for the group work.

6. **Reconvene the class. List on the board or a transparency the causes students have identified. Ask, "Which of the risk factors are related to lifestyle? Which of the risk factors do you have some choice about?"**

   It is important for students to grasp that the lifestyle choices offer them some control over their future health.

7. **Ask, "How does Our Town compare with your community?"**

   Students should bring up positive and negative differences in the following areas:

   - Video games
   - Boys and Girls Club
   - Eating habits
   - Sports
   - Spirituality

8. **Ask students if they have enough information on diabetes and prevention to start the civic action project.**

   Students should have all the information they need for Lesson 4's project. If not, ask students what they still have questions about and help them reason out the answer.

Assessment Opportunities

Collect students' completed copies of Copymaster 3.2, *Diabetes Findings about Our Town*. Administer the optional quiz for Lesson 3 (Copymaster 3.5, *Lesson 3 Quiz*).

Lesson 4
Your Community Needs You

At a Glance

Overview

Lesson 4, *Your Community Needs You*, involves one activity and takes approximately two class periods to complete. Students apply the concepts from previous lessons to a civic action designed to help their community prevent type 2 diabetes. Students will create a poster to educate and encourage type 2 diabetes prevention efforts in their community.

Enduring Understandings

- Lifestyle changes can be made to improve health.
- Community members need information about type 2 diabetes prevention to help them make better choices.
- It is a civic responsibility to help the community work toward balance and prevent type 2 diabetes.

Teacher Background

Because this is the Evaluate activity, no new information is presented.

Outcomes and Indicators of Success

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

1. list one way to educate the community on type 2 diabetes prevention.

They will demonstrate their understanding by

- listing possible topics for an educational poster and
- following the criteria for what makes a good poster.

2. describe what lifestyle changes are needed to improve health and prevent type 2 diabetes.

They will demonstrate their understanding by recalling lifestyle and diabetes information from previous lessons.

In Advance

Teacher Materials

1 transparency copy of Copymaster 4.1, *Type 2 Diabetes Prevention Poster*

1 copy of Copymaster 4.3, *Lesson 4 Quiz—Answer Key* (optional)

Student Materials

For each student

poster board

old magazines

markers

glue

colored pencils

scissors

tape

magazines, books, or the Web (optional)

1 copy of Copymaster 1.3, *Circle of Balance*, from Lesson 1

1 copy of Copymaster 2.2, *Lifestyle Findings about Our Town*, from Lesson 2

1 copy of Copymaster 3.1, *Type 2 Diabetes Information*, from Lesson 3

1 copy of Copymaster 3.2, *Diabetes Findings about Our Town*, from Lesson 3

1 copy of Copymaster 4.1, *Type 2 Diabetes Prevention Poster*

1 copy of Copymaster 4.2, *Lesson 4 Quiz* (optional)

Preparation

Determine where the students' posters will be displayed. A public place where adults will see them would be most effective (such as the recreation center or health office).

If you plan to complete any of the extensions at the end of the lesson, be sure to prepare in advance as necessary.

Process and Procedure

1. **Ask, "What does your community need from you, and from all of us, to prevent type 2 diabetes?"**

   Students might answer this with examples of civic actions and personal choices, or by referring to these ideas in a general sense. The general response should be, "We want our community to be healthy; we act out of a sense of the common good."

2. **Distribute Copymaster 4.1, *Type 2 Diabetes Prevention Poster*, and read the directions with students.**

   This activity is an actual civic action project—promoting change and educating others. Tell the students where their posters will be displayed. Make sure they know that others will see their work.

3. **Point out the *Topic Ideas* section on Copymaster 4.1. Ask, "What does your community need to know that you have learned in these lessons? What could you teach the community or encourage citizens to do?" Have students write the class's ideas on their handouts.**

   In Lesson 3, *A Community Seeks Balance*, students compared Our Town and their community. Review that information if students are struggling with ideas. Many of the needs of Our Town would likely be the same as their community's needs, while others may be unique.

   General topic ideas for the poster include the following:

- Educate the community about the Circle of Balance and type 2 diabetes prevention
- Encourage specific lifestyle changes (exercise, diet changes)
- Advertise community resources that could be used to help support lifestyle changes
- Explain what type 2 diabetes is
- Encourage adding new resources to the community to help citizens make positive lifestyle changes
- Encourage removing challenges or barriers that limit lifestyle choices
- Suggest ideas such as those listed above if students are having trouble. Note that the ideas are general, allowing students to use their knowledge and creativity. If you prefer, have all students focus on a poster that explains how to prevent type 2 diabetes.

4. **Ask, "What would make a poster most effective if the goal is to educate or persuade?" Record their answers on the transparency of Copymaster 4.1. Explain that their posters will be evaluated based on the criteria they develop. When the list is complete, have students write the criteria in the last section of their copies of Copymaster 4.1. Keep the criteria displayed while students work.**

Add important criteria as necessary. The following are provided as suggestions:

- Send a strong, clear message that will help the community prevent type 2 diabetes
- Must have a title (or a slogan)
- Be colorful and creative, with correct spelling and accurate information
- Mention type 2 diabetes prevention somewhere on the poster
- Include a mixture of pictures and words

5. **Point out materials that are available for students to use.**

Helpful unit handouts include the following:

- Copymaster 1.3, *Circle of Balance*
- Copymaster 2.2, *Lifestyle Findings about Our Town*
- Copymaster 3.1, *Type 2 Diabetes Information*
- Copymaster 3.2, *Diabetes Findings about Our Town*

Students can also use magazines, books, or the Web, if available.

6. **Suggest that students create a draft or plan as a first step.**

Rotate around the room as students plan and create their posters.

7. **Have students hand in their posters as a final evaluation of the unit.**

Be sure to hang their posters in the location noted in Step 2.

Possible Extensions

- Allow students to write a song, create a short commercial, or write a short play or story instead of creating a poster. All of these alternative projects must still persuade and educate people about type 2 diabetes prevention and lifestyle changes.
- Invite younger students to the classroom to teach them about diabetes prevention by using the posters or other projects students create. This is an opportunity for the older students to be role models.
- Invite community leaders and parents to the classroom. Have the students present their posters and concerns about type 2 diabetes. Ask the adults to speak about what is being done and what more could be done in the community.
- Choose one of the student's ideas for civic action. Have the students organize and plan a class civic action event or campaign. Involve the community in planning and carrying out the event.

Assessment Opportunities

Develop a scoring rubric using the class's criteria and have the students assess themselves or each other in addition to your own assessment. Administer the optional quiz for Lesson 4 (Copymaster 4.2, *Lesson 4 Quiz*).

Copymasters

1.1

Words of Wisdom

Directions: Read the quotes below. Each quote is from an American Indian person, tribe, or group. They are from different tribes and different times, but they carry a common message. Your task is to figure out what that message is—it will guide us in our lessons.

"Try to do something for your people—something difficult."

Winnebago Iesson

"Look and listen for the welfare of the whole people and have always in view not only the present but also the coming generations, even those whose faces are yet beneath the surface of the earth—the unborn of the future."

Constitution of the Five Nations

"We are never permitted to forget that we do not live to ourselves alone, but to our tribe and clan. Every child, from the first days of learning, is a public servant in training."

Ohiyesa (Charles Alexander Eastman), Dakota

"No person among us desires any other reward for performing a brave and worthy action, but the consciousness of having served his nation."

Joseph Brant (Thayendanegea), Mohawk

"I firmly believe we all need to look back to the things that have been wrongly abandoned. American Indian cultures and traditions can offer powerful positive examples. But the real challenge for everyone, Indian and non-Indian alike, is to be human, to accept our responsibilities and to embrace community, in the fullest sense of the word."

Joseph Bruchac, Abenaki

"Humankind has not woven the web of life. We are but one thread within it. Whatever we do to the web, we do to ourselves. All things are bound together. All things connect."

Chief Seattle

"Hear me! A single twig breaks, but a bundle of twigs is strong."

Tecumseh, Shawnee

1.2

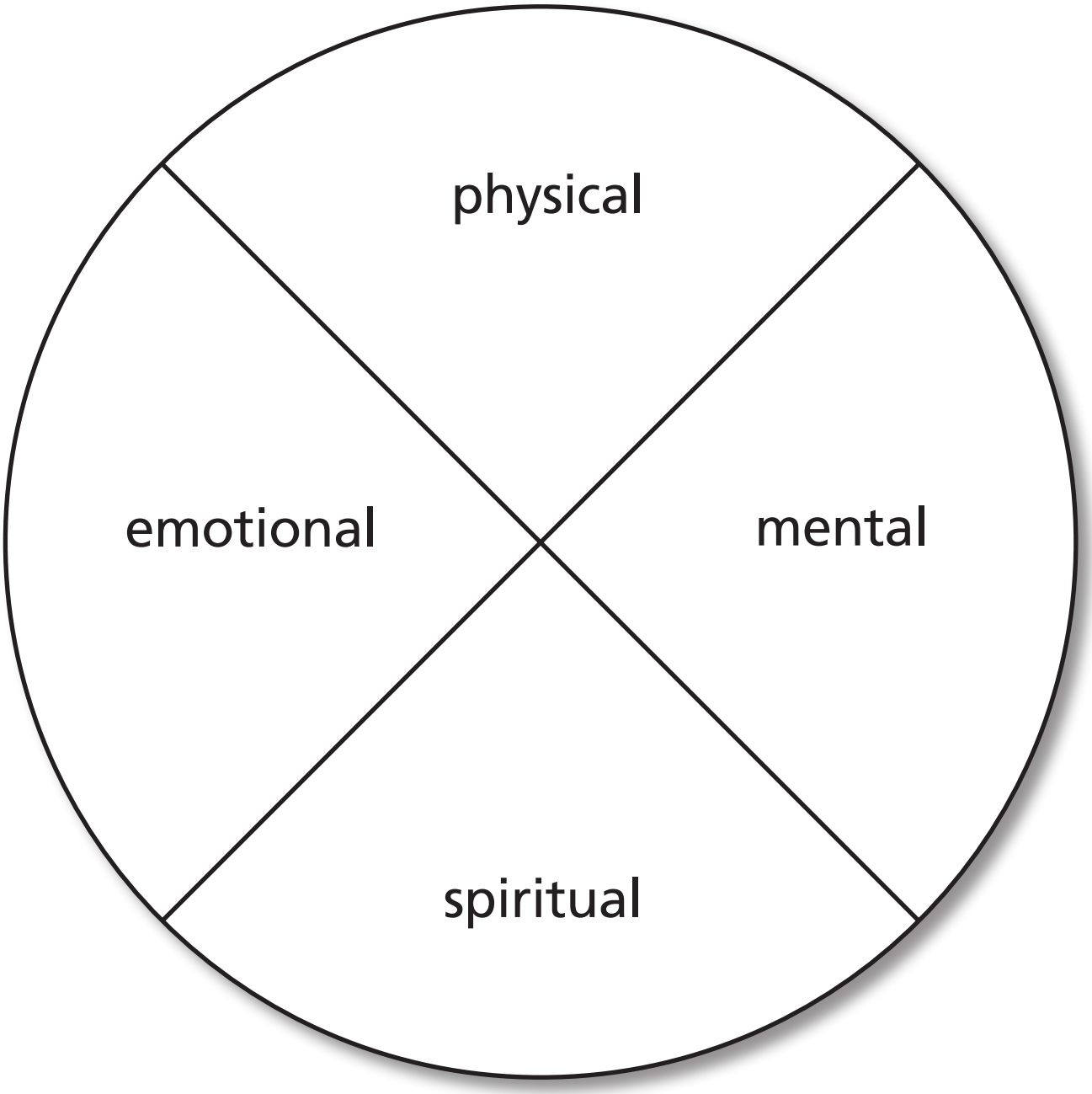
Health Concept Map

health

1.3

Circle of Balance

health = life in balance



1.4

Lifestyle Concept Map

lifestyle

Lifestyle: A series of behaviors and choices that are made by individuals, families, and communities. Examples include choices made about diet or physical activity.

Lifestyle involves choices!

1.5

Lifestyle Choices of a Role Model for Balance

Name _____ Date _____

Directions: The Circle of Balance defines health as life in balance. Lifestyle choices can lead us toward balance.

Think of specific people in your family or community who strive for balance in their lifestyles. They are your role models for a healthier life. Record some of their lifestyle choices (behaviors) below. What do they do that moves them toward balance? Try to include all four parts of the Circle of Balance in your different examples.

Lifestyle choice _____

Describe how this lifestyle choice affects balance: physically, mentally, spiritually and emotionally.

Lifestyle choice _____

Describe how this lifestyle choice affects balance: physically, mentally, spiritually and emotionally.

Lifestyle choice _____

Describe how this lifestyle choice affects balance: physically, mentally, spiritually and emotionally.

Lifestyle choice _____

Describe how this lifestyle choice affects balance: physically, mentally, spiritually and emotionally.

1.6

Our Role Models for Balance

Lifestyle choice _____

Lifestyle choice _____

Lifestyle choice _____

Lifestyle choice _____

1.7

Lesson 1 Quiz

Name Date

Directions: Please indicate which response you believe is the correct one.

1. The idea that we should act for the good of all is called which of the following?

_____a. a civic responsibility

_____b. a civil disobedience

_____c. a natural right

_____d. a volunteer spirit

2. Which symbol helps us understand balance and has cultural importance?

_____a. a triangle

_____b. a circle

_____c. a health map

_____d. a balance beam

3. Balance is finding harmony in our physical, mental, spiritual, and emotional life.

_____true _____false

4. Health is which of the following?

_____a. something we can never control

_____b. not related to our lifestyle choices

_____c. life in balance

_____d. only important to older generations

5. Lifestyle choices that would lead to better balance include which of the following?

_____a. eating fruits and vegetables and avoiding junk food

_____b. participating in traditional dance ceremonies

_____c. joining a sports team rather than watching TV after school

_____d. all of the above

1.8

Lesson 1 Quiz—Answer Key

1. The idea that we should act for the good of all is called which of the following?

__X__ a. a civic responsibility

_____ b. a civil disobedience

_____ c. a natural right

_____ d. a volunteer spirit

2. Which symbol helps us understand balance and has cultural importance?

_____ a. a triangle

__X__ b. a circle

_____ c. a health map

_____ d. a balance beam

3. Balance is finding harmony in our physical, mental, spiritual, and emotional life.

__X__ true _____ false

4. Health is which of the following?

_____ a. something we can never control

_____ b. not related to our lifestyle choices

__X__ c. life in balance

_____ d. only important to older generations

5. Lifestyle choices that would lead to better balance include which of the following?

_____ a. eating fruits and vegetables and avoiding junk food

_____ b. participating in traditional dance ceremonies

_____ c. joining a sports team rather than watching TV after school

__X__ d. all of the above

2.1

Getting to Know Our Town

***Directions: You are a citizen of Our Town. Type 2 diabetes prevention is a new goal that the community is exploring. You will be serving on a committee that will analyze information about Our Town (listed below). Working in groups, you will record your observations on Copymaster 2.2,* Lifestyle Findings about Our Town,** ***and later in Lesson 3, on Copymaster 3.2,* Diabetes Findings about Our Town.**

Information about Our Town

- About 90 percent of students in Our Town are American Indian.
- About 75 percent of young people in Our Town report that they rarely eat fruits and vegetables, even though health experts recommend five servings per day.
- Only 15 community members attended the Diabetes Walk last year.
- Students at Our Town Public School learn that television commercials can encourage them to buy sugary, fatty snacks. They also learn how to read nutrition labels.
- Elders in Our Town teach all 7th- and 8th-grade students about preparing traditional foods.
- About 20 percent of students belong to the Our Town Boys and Girls Club, where they spend at least one hour per week. The club has a traditional arts and crafts club and a gym.
- About 68 percent of Our Town middle school students report that they spend at least one hour per day playing video games.
- The tribal government is holding planning meetings to create a new bike trail.
- About 50 percent of Our Town's young people report that they spend zero hours on a school sports team. Most of them said that the $75 fee per sport was too expensive for their families.
- Over half of Our Town's young people report that they buy sugary soda from the school vending machine every day.
- About 10 percent of Our Town's families particpated in the last tribal dance event.
- Students first learn about type 2 diabetes in 11th grade health class.

2.1

- About 40 percent of Our Town's young people report that they spend more than two hours per day watching television.
- The Our Town parks department is considering adding three basketball courts near the downtown area.
- Most Our Town's young people report that they live too far from town to get to the Boys and Girls Club easily.
- Gym classes are held twice a week for students at Our Town Middle School. Each class is 20 minutes. National health experts recommend 30 minutes of physical activity most days.
- About 70 percent of Our Town young people know an adult who could give them spiritual guidance. About 40 percent say that they spend time talking to this adult about spirituality once a week.

2.2

Lifestyle Findings about Our Town

Name Date

Remember, the findings you record here will help the community move toward civic action and better lifestyle choices to prevent type 2 diabetes. Be thorough!

1. List at least five facts about lifestyle choices in Our Town. For each fact, list which part(s) of the Circle of Balance is affected by this choice. Some choices may cause balance, others may cause imbalance. List both types of examples.

Lifestyle Choice	Circle of Balance Part(s) Affected

2.2

2. What obstacles would citizens face as they tried to make better, more-balanced lifestyle choices?

3. What tools and resources are already in their environment, or are being considered by tribal government, that would support people who want to make better lifestyle choices?

2.3

Lifestyle Findings—Possible Answers

1. List at least five facts about lifestyle choices in Our Town. For each fact, list which part(s) of the Circle of Balance is affected by this choice. Some choices may cause balance, others may cause imbalance. List both types of examples.

This exercise helps students in their fact-gathering skills—analyzing information and determining what is significant. Some bulleted information on Copymaster 2.1,* Getting to Know Our Town*, does not indicate a choice, for example, ethnic background. Not all elements are within the individual's control, but many are. Other bulleted points give information about influences on lifestyle behaviors, such as resources (bike trail development, for example).

Lifestyle Choice	Circle of Balance part(s) affected
20% belong to Boys and Girls Club	Physical, emotional
Over 50% of students are purchasing soda at school	Physical
11th graders learn about type 2 diabetes	Mental, physical
75% rarely eat fruits and vegetable	Physical
Learn about TV commercials and food choices	Physical
10% participate in tribal dance	Physical, spiritual, mental, emotional
68% spend at least one hour playing video games	Physical, mental
7th and 8th graders learn about traditional foods	Physical, spiritual, emotional, mental
40% spend over two hours a day watching TV	Physical, mental, emotional
Attend gym class twice a week, 20 minutes	Physical
40% talk to spiritual guide weekly	Spiritual, mental
50% spend zero hours on a sports team	Physical
15 participants in Diabetes Walk	Physical, emotional

2.3

2. What obstacles would citizens face as they tried to make better, more-balanced lifestyle choices?

Students should list some of the negative influences on lifestyle choices. Point out these might be overcome with community action.

- High sports fees
- No transportation to the Boys and Girls Club
- Not enough time for gym class
- Fun TV and video games
- Soda vending machine in the school

3. What tools and resources are already in their environment, or are being considered by tribal government, that would support people who want to make better lifestyle choices?

- Boys and Girls Club
- Sports in school
- Tribal dances
- New bike trail being considered
- New basketball courts being considered
- Diabetes Walk
- Classes about TV commercials
- Classes about type 2 diabetes prevention
- Classes about traditional foods
- Spiritual guides in their community

2.4

Lesson 2 Quiz

Name Date

Directions: Please indicate which response you believe is the correct one.

1. Lifestyle choices

_____ a. are influenced by factors in the community.

_____ b. cannot be controlled by the individual.

_____ c. do not affect health.

_____ d. cannot affect whether we get type 2 diabetes.

2. Sometimes people have to overcome challenges to change their lifestyle.

_____ true _____ false

3. We are doing our civic duty when we act for the good of all.

_____ true _____ false

4. Which of the actions listed below would make it easier for community members to choose a healthy lifestyle?

_____ a. increasing the cost to be in sports

_____ b. putting more soda machines in schools

_____ c. providing a bus that takes kids to the indoor swimming pool after school

_____ d. giving candy as a reward

5. Lifestyle choices that would lead to better balance include which of the following?

_____ a. eating fruits and vegetables and avoiding junk food

_____ b. participating in traditional dance ceremonies

_____ c. joining a sports team rather than watching TV after school

_____ d. all of the above

2.5

Lesson 2 Quiz—Answer Key

1. Lifestyle choices

__X__ a. are influenced by factors in the community.

_____ b. cannot be controlled by the individual.

_____ c. do not affect health.

_____ d. cannot affect whether we get type 2 diabetes.

2. Sometimes people have to overcome challenges to change their lifestyle.

__X__ true _____ false

3. We are doing our civic duty when we act for the good of all.

__X__ true _____ false

4. Which of the actions listed below would make it easier for community members to choose a healthy lifestyle?

_____ a. increasing the cost to be in sports

_____ b. putting more soda machines in schools

__X__ c. providing a bus that takes kids to the indoor swimming pool after school

_____ d. giving candy as a reward

5. Lifestyle choices that would lead to better balance include which of the following?

_____ a. eating fruits and vegetables and avoiding junk food

_____ b. participating in traditional dance ceremonies

_____ c. joining a sports team rather than watching TV after school

__X__ d. all of the above

3.1

Type 2 Diabetes Information

Having type 2 diabetes means that your blood sugar, or blood glucose, is too high. Your body gets glucose from the foods you eat. Glucose is also made by your muscles and liver.

What Is Type 2 Diabetes?

Type 2 diabetes is one form of diabetes. It used to be called adult-onset diabetes. This disease is rapidly becoming more common in children. It is believed that changes in our nutrition (foods we eat and how much we eat) and a decrease in our activity level (lack of exercise) have caused this disease to move into the younger population.

Why Is Type 2 Diabetes an Important Issue?

- Diabetes and other complications that arise for people with diabetes are major public health problems in the United States.
- In the United States, the rate of type 2 diabetes is often two to five times higher among American Indians and Alaska Natives than among the general population.
- Until recently, type 2 diabetes was rarely diagnosed in children and teens. It has now been reported in American Indian children as young as four years old. It is becoming increasingly common among children 10 and older.
- A recent Indian Health Service study showed that between 1991 and 1997, diabetes increased by 32 percent in American Indian children aged 15 to 19.
- Having diabetes can contribute to a person's risk of heart disease, stroke, pneumonia, and other leading causes of death in American Indians.
- In some Native communities, one in two adults has diabetes.

3.1

What Increases the Chance of Getting Type 2 Diabetes?

Some risk factors include the following:

- Obesity or being overweight
- An inactive lifestyle
- A diet high in fats and sugars
- A family history of type 2 diabetes

What Can be Done to Prevent Type 2 Diabetes?

Lifestyle changes can prevent or delay the onset of diabetes. Research shows that the key lifestyle choices necessary to prevent diabetes are choosing nutritious foods to eat, eating smaller portion sizes, and getting daily physical activity. Talking about and expressing our feelings can help us cope with life. Having goals and visions about our future and our role in our family, community, and world can positively affect our health, too. Observing traditions and understanding our culture can make us stronger. Challenging our minds with new ideas makes us healthier. All of this affects our wellness and can help prevent diabetes. The most effective prevention efforts have strong community support and acceptance.

3.2

Diabetes Findings about Our Town

Name Date

Remember, the findings you record here will help the community move toward civic action and better lifestyle choices to prevent type 2 diabetes. Be thorough!

1. What should the citizens of Our Town know about type 2 diabetes? List at least five facts that will help them.

3.2

2. List at least five possible goals for civic action projects that could help prevent type 2 diabetes.

3. In what ways is Our Town like your town? Are people making similar lifestyle choices? Are similar resources available that people could use to change their lifestyles? Are there similar challenges?

3.3

Diabetes Findings—Possible Answers

1. What should the citizens of Our Town know about type 2 diabetes? List at least five facts that will help them.

- Type 2 diabetes is preventable.
- American Indians are at a higher risk for type 2 diabetes.
- Obesity is a risk factor.
- People with a family member who has diabetes are at a higher risk.
- More children are getting type 2 diabetes.
- Individuals can make lifestyle choices that lead to better balance and help prevent type 2 diabetes.
- Eating a balanced diet and not overeating are lifestyle choices that help prevent type 2 diabetes.
- Getting regular physical activity is a lifestyle choice that helps prevent type 2 diabetes.

2. List at least five possible goals for civic action projects that could help prevent type 2 diabetes.

This might be a challenging step, but once some examples are shared, students are likely to catch on. Tell them to think about encouraging new behaviors, using existing resources more, removing negative influences, or adding new resources.

- Get more kids involved at Boys and Girls Club
- Get rid of soda machine in the school
- Provide more gym time at schools
- Encourage better participation at tribal dances, the Diabetes Walk
- Teach younger kids about type 2 diabetes
- Get more kids learning about traditional foods
- Have elders reach out to kids about spiritual guidance
- Encourage parents to limit TV and video game time
- Develop basketball courts and trails

- Add a bus system that will transport kids to the Boys and Girls Club (could hold a fundraiser to make this possible)
- Have the community help kids pay for sports fees

3. In what ways is Our Town like your town? Are people making similar lifestyle choices? Are similar resources available that people could use to change their lifestyles? Are there similar challenges?

Assist students in thinking about their own lifestyle choices and those of their peers as well as what the community influences on behavior might be.

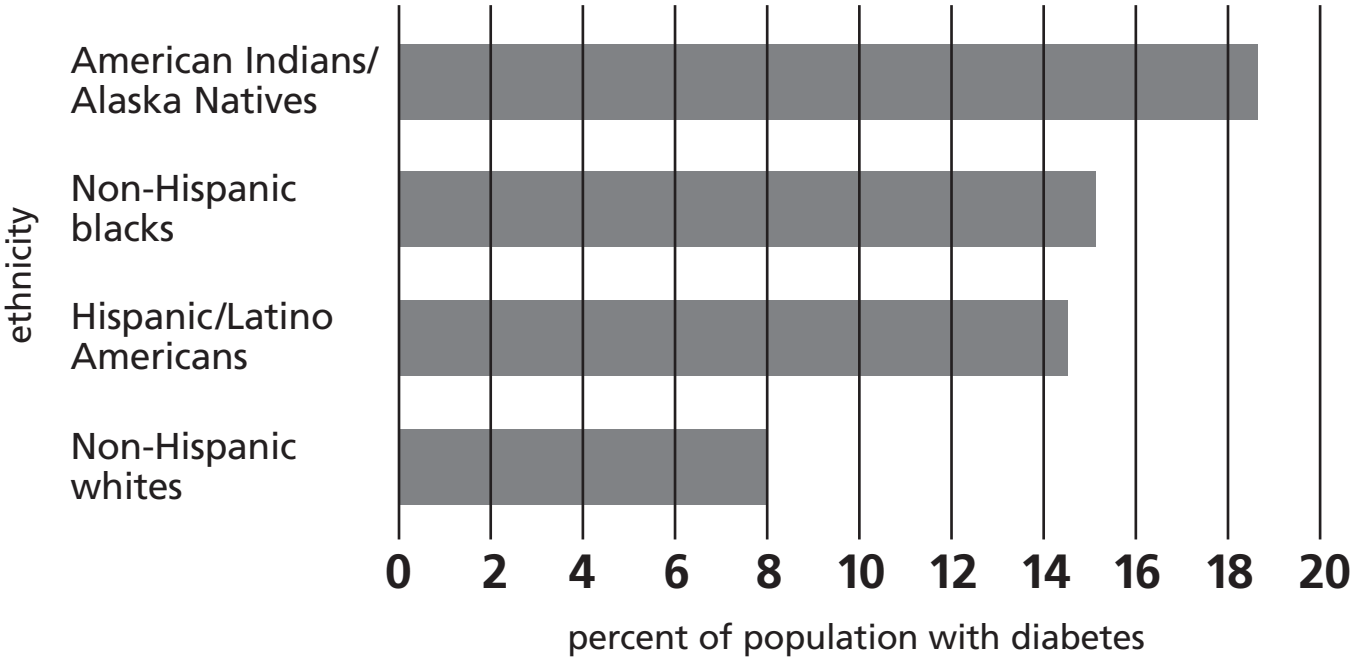
Ask questions such as, "Are similar lifestyle choices being made? Which ones?" "Does your town have similar resources that could be used to change lifestyles?" "Do you have ideas about how your community could prevent type 2 diabetes?"

This leads students into the next activity. They will apply what they have learned here in a civic action activity aimed at type 2 diabetes prevention in their community.

3.4

Prevalence of Diabetes by Race and Ethnicity

Estimated age-adjusted total prevalence of diabetes in people aged 20 years or older, by race and ethnicity, United States, 2005



Sources: 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 (NHANES). For the other groups, 1999–2002 NHANES estimates of total prevalence (both diagnosed and undiagnosed) were projected to year 2005.

3.5

Lesson 3 Quiz

Name Date

Directions: Please indicate which response you believe is the correct one.

1. Type 2 diabetes

_____ a. cannot be prevented.

_____ b. is not diagnosed in children.

_____ c. is seen less in American Indians than in any other group.

_____ d. can be prevented or delayed.

2. Which of the following lifestyle choices would help prevent type 2 diabetes?

_____ a. playing on a basketball team

_____ b. drinking less sugary soda

_____ c. eating healthy traditional foods

_____ d. all of the above

3. Having diabetes can increase a person's risk of heart disease, stroke, and pneumonia.

_____ true _____ false

4. Glucose (blood sugar) comes from

_____ a. the foods we eat and our muscles and liver.

_____ b. our kidneys.

_____ c. only fatty and sugary foods.

_____ d. the air we breathe.

5. Having type 2 diabetes means

_____ a. you have eaten too much sugar in your lifetime.

_____ b. your blood sugar (glucose) level is too high.

_____ c. your children will definitely have type 2 diabetes.

_____ d. you are in balance.

3.6

Lesson 3 Quiz—Answer Key

1. Type 2 diabetes

_____a. cannot be prevented.

_____b. is not diagnosed in children.

_____c. is seen less in American Indians than in any other group.

__X__d. can be prevented or delayed.

2. Which of the following lifestyle choices would help prevent type 2 diabetes?

_____a. playing on a basketball team

_____b. drinking less sugary soda

_____c. eating healthy traditional foods

__X__d. all of the above

3. Having diabetes can increase a person's risk of heart disease, stroke, and pneumonia.

__X__true _____ false

4. Glucose (blood sugar) comes from

__X__a. the foods we eat and our muscles and liver.

_____b. our kidneys.

_____c. only fatty and sugary foods.

_____d. the air we breathe.

5. Having type 2 diabetes means

_____a. you have eaten too much sugar in your lifetime.

__X__b. your blood sugar (glucose) level is too high.

_____c. your children will definitely have type 2 diabetes.

_____d. you are in balance.

4.1

Type 2 Diabetes Prevention Poster

Directions: You will create a poster that promotes awareness about type 2 diabetes prevention in your community.

Topic Ideas

- _____
- _____
- _____
- _____
- _____
- _____
- _____
- _____

What Makes an Effective Poster

- _____
- _____
- _____
- _____
- _____
- _____
- _____
- _____

4.2

Lesson 4 Quiz

Name Date

Directions: Please indicate which response you believe is the correct one.

1. Which statement is true?

_____ a. Being overweight increases the risk of type 2 diabetes.

_____ b. Having type 2 diabetes does not increase the risk of heart disease.

_____ c. Children do not get type 2 diabetes.

_____ d. Type 2 diabetes cannot be prevented.

2. Type 2 diabetes can be prevented by which of the following?

_____ a. individuals making good lifestyle choices

_____ b. the community working together for healthy living

_____ c. individuals and the community seeking balance among the four parts of the Circle of Balance

_____ d. all of the above

3. Students are too young to help the community prevent diabetes.

_____ true _____ false

4. Role models can help guide us toward healthy lifestyle choices.

_____ true _____ false

5. The Circle of Balance model can guide us toward healthy lifestyle choices.

_____ true _____ false

4.3

Lesson 4 Quiz—Answer Key

1. Which statement is true?

__X__ a. Being overweight increases the risk of type 2 diabetes.

_____ b. Having type 2 diabetes does not increase the risk of heart disease.

_____ c. Children do not get type 2 diabetes.

_____ d. Type 2 diabetes cannot be prevented.

2. Type 2 diabetes can be prevented by which of the following?

_____ a. individuals making good lifestyle choices

_____ b. the community working together for healthy living

_____ c. individuals and the community seeking balance among the four parts of the Circle of Balance

__X__ d. all of the above

3. Students are too young to help the community prevent diabetes.

_____ true __X__ false

4. Role models can help guide us toward healthy lifestyle choices.

__X__ true _____ false

5. The Circle of Balance model can guide us toward healthy lifestyle choices.

__X__ true _____ false

References

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