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Getting an Early Start to a Healthy Life

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Introduction

There are many reasons to teach a unit about nutrition and healthy lifestyles to third graders. The rate of young children developing diabetes and other adult type diseases is growing. Students are taking medications now that they may need to take their entire life! Who knows what effect these medications have on the bodies of my students today and as they get older?

The increase in diabetes is linked with an increase in obesity, which is especially worrisome in children. The obesity rate among American children continues to increase. In 1971, 4% of 6 to 11 year old children were obese, by 2004, that figure has leaped to 18.8%. ¹ Some studies state that 25% to 50% of obese children will remain obese into adulthood. The numbers for African-American and Hispanic children being classified as obese are even higher, with as many as 25% of children in these racial groups being classified as obese. My students are at risk for becoming obese with 73% being minorities from at risk populations. Students today lead a more sedentary lifestyle than their previous counterparts. Endless hours of TV programming, video games, and computer activities have students passively engaged and sitting for hours.

The availability of food choices can be overwhelming: it is difficult to tell healthy from unhealthy. I want my students to start paying attention to what they put into their bodies and what effects these foods have on their moods, activity levels, and even academics. I want to encourage them to make smart choice based not only on what I teach them but also on how they feel when they eat healthier foods.

I want to get them up and start moving to help counteract the trend toward obesity. The conversations overheard from my students often involve some type of video game trick, computer website, or TV show summary. I want to replace those conversations with questions and comments about the activities they are participating in. My dream would be to walk in and hear Dwayne say, "Last night I went biking with my older brother!" and Chris reply, "That's great, I played Lacrosse."

Everyone knows that we need sleep, but we're not too sure about why. A German study focused on nearly 7000 children aged five to six. This study found that the less a child slept, the more likely they were to be overweight. ² It has also been suggested that the amount of sleep a student gets can affect their academic performance. I want to expose these ideas to my students and have them become more attentive to what happens to their bodies and performance when they get enough sleep as compared to when they do not. If I

can give my students and their families' quick, inexpensive, healthy alternatives, it will be a great way to get an early start to a healthy life.

This unit will be taught during an eight-week period using an interdisciplinary approach. The science standards will be taught for 45 minutes three to four times a week during Science class; the mathematics standards will be imbedded in the activities presented during science content instruction and also one hour a week during Math class; the physical education standards will be taught for 45 minutes two times a week. This approach will help to motivate my students and give them authentic opportunities to apply the information they are learning. The main content of this unit will include the science standards with additional instruction on the biological process of digestion. Students will be learning about the human body and digestion. Imbedded in this will be my English/Language Arts standards as the students participate in research projects, maintain personal journals, and complete a variety of vocabulary activities. Mathematics standards will be addressed as I highlight real life problem-solving opportunities. The students will collect, graph, and extrapolate information on personal eating, resting, and physical activity data. As students gain knowledge about obtaining and maintaining a healthy lifestyle, Physical Education standards will be integrated to get the students up and moving.

Achieving a healthy lifestyle can be puzzling. To sort this out I will identify three main pieces to this puzzle and arrange them to suggest a pathway to a healthier life. The first puzzle piece is food and nutrition. I will introduce the concept of a food calorie with the students and the building blocks of nutrition; carbohydrates, proteins, and fats. The second piece of the puzzle is the physical process of digestion. Students will be responsible for researching digestion and developing a final project to display the knowledge they have gained. The final piece is the physical aspects of healthy living. Students will investigate a variety of activities and the caloric cost of those activities to begin to understand the balance of calories in versus calories out. In addition, students will consider the importance of sleep in their daily lives and investigate their performance based on their sleep hours. At the end of the unit, all three of these pieces will come together to show the big picture of how to achieve and preserve a healthy lifestyle.

Demographics

The Red Clay Consolidated School District is located in Northern New Castle County, Delaware with a combination of urban and suburban settings. Some of its elementary schools are located in the heart of the largest city in the state. The district is comprised of 30 schools with approximately 1000 teachers. It services over 15,000 students. Of those students, 27% are African American, 4% are Asian, 20% are Hispanic, and 49% are White. Students' needs vary, almost 15% receive Special Education Services and 10% receive English Language support. In addition, 41% of the students come from families with low incomes.

My school, Highlands Elementary, is an urban school in the city of Wilmington, Delaware. We are a small K-5 school with an enrollment of an average of 370 students. Our minority population represents 73% of our student body with 58% of the students falling into the low socio-economic status. I am a third grade teacher with a class size varying between 24-28 students. The diversity of my classroom is representative of the make-up of the school.

Objectives

This unit will be used as an introduction to the topic of the human body. I expect my third graders will have limited prior knowledge on this topic and I will continuously adjust the pacing of the delivery of the information to ensure comprehension. Through teaching this unit, I would like to give my students basic building blocks that they can use to understand how to make informed decisions regarding the foods they choose. At the end of this unit, they will be able to determine the caloric content of foods they eat and tabulate the caloric intake for the day. They will be able to recognize which foods contain carbohydrates, proteins, fats, vitamins, and minerals in order to create a varied diet.

As the unit progresses, students will develop and use procedures to gather information for their research projects. They will independently extract information from a variety of sources to gain knowledge about the digestion process. Students will produce nonfiction research text following standard language conventions. Students will form groups and use technology to create a final project expressing the ideas and experiences gained through this research project.

In addition to learning science content, this unit will deliver mathematics instruction. My students will collect data in several areas of the unit and organize this data. They will graph the data and extrapolate information from their graphs. Imbedded in this unit will be many occasions for my students to add, subtract, and multiply numbers.

Physical education is another important content area for this unit. Students will create and record personal fitness data, caloric intake, and sleep patterns in an individualized journal. The information collected in these journals will enable students to note and monitor changes as their knowledge of nutrition and physical activity broadens. Students will be able to explain the relationship between body types, physical activity, and food consumption, thus gaining a preliminary understanding of the balance of calories in versus calories out.

Rationale

Consumers today are bombarded with conflicting messages about food. How many calories should I consume? What types of food does my body need? What exactly is a carbohydrate and why do I need them? Because all of this information is confusing to me, I can only imagine how confusing it is to my third graders. My purpose with this unit is to provide reliable information to students at an early age, which I hope will allow them to make lifestyle choices that will benefit them throughout their lives. I have developed a unit that will encourage students to be aware of the choices that are available to them and give them a beginning level of understanding to make those choice healthy ones.

The Human Body is part of the third grade science curriculum in Delaware. The state provides all third grade classrooms with the FOSS Science Kit to teach this topic. In this kit, lessons are laid out and materials are provided for the instruction about bones, muscles, joints, and coordination. While some of the lessons are interesting to the students, there is almost no opportunity for interactive scientific investigation. Therefore, the students tend to become casual learners, not the engaged learners I strive to encourage in my classroom. I will use the FOSS Science Kit as a starting point and supplement it with additional information, which I

describe here. This will allow students to become more active: as they examine the digestion process from beginning to end. I expect them to gain a better understanding of how the body actually works to keep us alive.

It is important to me that learning situations be authentic. By infusing this science content into their mathematics, reading, and writing lessons I intend to create excitement about the unit as well as provide lessons within real life context. Students will be gaining numerical reasoning and quantitative reasoning skills using information from their own lives. Their work will have personal meaning to them and therefore they will have ownership of the material.

Many of my students live in areas where it is unsafe for them to play outside. I will give them alternate physical activities, which they can complete in a safe environment alone, with friends, or with their families. Also, some students excel in competitive team sports, while others prefer individual activities; I will provide choices to get even the most reluctant student up and moving.

Content Area 1: Calories In

What is a calorie?

The number of calories in a food is a unit of measure that describes how much energy a particular food possesses. Our bodies burn these calories and break them down to provide us with the energy we need to breathe, make our heart beat, and think. Physical activity also consumes calories. Physical activity includes everything from brushing your teeth in the morning to running around a track. If the calories we take in during the day equals the calories our bodies use during the same day, then our weight remains constant. Anytime that the balance is changed our weight also changes: if we take in more calories than our bodies use our weight will increase and if we use more calories than we take in our weight will drop.

What is in the food we eat?

Our diets need to contain carbohydrates, proteins, and fats. We want to get the majority of calories from carbohydrates and proteins but our bodies do need a certain amount of fats to stay healthy. Carbohydrates are a good source of energy because they fuel muscles during exercise. Proteins are needed to provide the building blocks to make body tissues like muscles. Your body depends on fats for a variety of functions. Fats form a major energy source for cells. They make up adipose tissue, which stores energy, cushions and protects organ, and provide insulations. ³ Fats are necessary for the absorption of many things the body needs. Some vitamins that we need to stay healthy (such as vitamin A, D, E, and K) are only dissolved by fats. If we do not get enough fats in our diets, these vitamins will pass through our bodies and not get absorbed. Vitamins and minerals control the reactions in our bodies that change food into energy and are needed to make your body work properly. They boost your immune system, help cells and organs grow, and help keep your bones strong. Some vitamins can be stored in our bodies whereas others cannot be and therefore need to be replenished every day.

What is a healthy diet?

In Delaware there is an initiative 5-2-1-Almost None. In this initiative students are instructed to eat 5 servings

a day of fruits and vegetables, spend no more than 2 hours a day in front of a screen (TV, computer, or video games), to be physically active 1 hour a day, and to consume Almost None of sugared drinks. I will be using materials provided by this initiative to help my students construct healthy menus.

Content Area 2: Digestion

What is the process of digestion?

Digestion allows your body to get the energy and nutrients it needs to stay healthy. This process starts in the mouth as food is chewed enzymes in saliva go to work to break down the molecules within food. Swallowing the food sends it on its journey down the esophagus and into the stomach. While in the stomach food is broken down further before it goes to the small intestines. The food is broken down even further in the small intestine. In addition the small intestine is the primary site for absorption of carbohydrates, proteins, fats, vitamins, and minerals from digested food into the bloodstream. The next station on the route is the large intestine, this is the last chance for your body to absorb any leftover nutrients and water before the unused materials leaves the body as waste products.

How does our body use what we eat?

Most of the digested particles of food are absorbed through the small intestine. The small intestine is covered with fingerlike projections called villi. These projections create a large surface area through which nutrients can be absorbed. Specialized cells allow these absorbed materials to enter into the blood where they are carried off to other parts of the body for storage or further changes.

Carbohydrates

The digestible carbohydrates—starch and sugar—are broken into simpler molecules by enzymes in the saliva, in juice produced by the pancreas, and in the lining of the small intestine. Starch is digested in two steps. First, an enzyme in the saliva and pancreatic juice breaks the starch into molecules called maltose. Then an enzyme in the lining of the small intestine splits the maltose into glucose molecules that can be absorbed into the blood. Glucose is carried through the bloodstream to the liver, where it is stored or used to provide energy for the work of the body.

Simple sugars—called monosaccharides—are absorbed in one step. More complex sugar molecules need to be broken down prior to absorption. An enzyme in the lining of the small intestine digests the disaccharide sucrose, also known as table sugar, into glucose and fructose, which are absorbed through the intestine into the blood. Milk contains another type of disaccharide, lactose, which is changed into absorbable molecules by another enzyme in the intestinal lining.

Fiber is undigestible and moves through the digestive tract without being broken down by enzymes. Many foods contain both soluble and insoluble fiber. Soluble fiber dissolves easily in water and takes on a soft, gel-like texture in the intestines. Insoluble fiber, on the other hand, passes essentially unchanged through the intestines. ⁴

Protein

Foods such as meat, eggs, and beans consist of giant molecules of protein that must be digested by enzymes to yield small molecules (called amino acids) that can be absorbed into the body and used to build and repair body tissues. An enzyme in the juice of the stomach starts the digestion of swallowed protein. Then in the small intestine, several enzymes from the pancreatic juice and the lining of the intestine complete the breakdown of huge protein molecules into small molecules called amino acids. These small molecules can be absorbed through the small intestine into the blood and then be carried to all parts of the body to build the walls and other parts of cells. ⁵

Fats

Fat molecules are a rich source of energy for the body. The first step in digestion of a fat such as butter is to disperse it into the watery content of the intestine. But this is difficult, because fats and water do not naturally mix. The bile acids produced by the liver help dissolve fat into tiny droplets and allow pancreatic and intestinal enzymes to break the large fat globules into smaller ones. Eventually, fat can be broken down to its molecular components, including triglycerides, fatty acids, and cholesterol. The bile acids combine with the fatty acids and cholesterol and help these molecules move into the cells of the mucosa. In these cells, small molecules are formed back into large ones, most of which pass into vessels called lymphatics near the intestine. These small vessels carry the reformed fat to the veins of the chest, and the blood carries the fat to storage depots in different parts of the body. ⁶

Vitamins

Another vital part of food that is absorbed through the small intestine is vitamins. The two types of vitamins are classified by the fluid in which they can be dissolved: water-soluble vitamins (all the B vitamins and vitamin C) and fat-soluble vitamins (vitamins A, D, E, and K). Fat-soluble vitamins are stored in the liver and fatty tissue of the body, whereas water-soluble vitamins are not easily stored and excess amounts are flushed out in the urine. ⁷

Content Area 3: Calories Out

What types of activities will benefit you?

Physical activity does not have to be synonymous with hard work! The way to hook students into physical activity is to make it fun. Students can run, jump, roller skate or participate in any number of activities. Physical activity for children can be beneficial in a number of ways including strengthening muscles and bones, providing aerobic fitness, maintaining a healthy weight, as well as releasing stress and increasing self esteem. It is important to encourage students to do things in which they have an interest in order for them have success and create and institute an active lifestyle before they become adults.

How much exercise do you need to be healthy?

If students are not currently active they will need to start slowly and gradually to build their strength, confidence, and endurance. This will also help to prevent injuries. Students should work up to one hour of physical activity every day. This physical activity can be spread out over time, for example in increments of fifteen minutes throughout the day.

What are the benefits of a good night's rest?

An often overlooked aspect of a healthy lifestyle is the amount of sleep a student gets. It is recommended that students between the ages of 6-9 get at least nine to ten hours of sleep each night. Students who get enough sleep are reported to perform better in school.

Strategies

Differentiated Instruction

In order to meet the needs of all the learners in my classroom, I will use Differentiated Instruction. Differentiated Instruction is an approach to teaching content in ways that address a variety of learning styles and needs of students while maximizing the potential of all learners. This will help me to accommodate the diversity of academic needs present in my classroom. My instruction as well as the students' research can be differentiated in a variety of ways. I will be able to differentiate according to content, process, or product. Through differentiated content students will have access to a varied level of texts and/or websites and could possibly be "buddied" with a partner at a different level to assist with the learning. Differentiated process refers to activities that help the students make sense of the skills being taught. These activities can be modified to enable students of varied readiness to work on their level. When differentiating products, students are given choices to create different products based on their individualized learning style.

The digestion research project portion of this unit lends itself very well to Differentiated Instruction on each of the mentioned levels. Students will be provided texts at an appropriate level and other sources to enable them to have access to all necessary information on their ability level. As the students create the final product, they will have the opportunity to decide how they want to present the information they have gathered.

Word Sorts

Another strategy implemented in this unit will be the use of word sorts. Word sorts are a hands-on instructional tool used to teach vocabulary. Words or pictures can be categorized based on pre-determined labels. Word sorts enable students to compare and contrast items through a variety of criteria. Students use reasoning skills to categorize and discover patterns that they can later apply to unknown words they encounter. This activity is very easily leveled to meet the needs of the diverse learners in my classroom.

Vocabulary instruction will be enhanced not only through word sorts in which students will be able to develop the criteria for sorting, but also through picture sorts. Students will use magazines to find examples of a variety of foods and will sort these pictures according to the food groups.

Cooperative Learning

Cooperative Learning is a successful teaching strategy in which teams of learners of varied abilities and interest come together to help each other to improve their understanding of the subject matter. Cooperative Learning is used to promote student learning and retention of material, foster positive social relationships within the classroom community, and enhance student satisfaction with the learning experience. The following

are examples of a variety of cooperative learning activities that I will make use of throughout this unit.

Jigsaw

This activity is useful when the workload is larger and can be divided up. Groups of three to five students are formed and the text is broken up into smaller chunks. Each member of the group is assigned a portion to learn. The group reassembles and each separate member serves as an expert on the portion they have learned as they become the teacher. When the students are beginning their research on digestion, a preliminary information packet or non-fiction book will be useful to help guide their learning. During this initial phase of research, students can be divided into small groups and each member will become the "expert" on one portion of the digestive process such as the mouth or the stomach. Students will then have some valuable information pertinent to their research and will feel confident as they begin to put the pieces together with their group members.

Think-Pair-Share

This approach involves three steps. During step one, students "think" silently about the topic or a question about the topic. After a pre-determined time frame, generally one to two minutes, students "pair" up and discuss their thoughts or responses on the topic. After another minute or two, students "share" their thoughts or response with other "pairs" or the entire group. Informal assessments are key to checking for understanding and a good way to accomplish this is to pose higher order thinking questions at the end of a daily lesson. A question will be posed by me and the students will answer the question using this method. Participating in this activity helps students analyze and evaluate their learning as well as clear up confusion or misconceptions in a non-threatening way as they answer a daily question in smaller less threatening groups.

Team-Pair-Solo

This approach is similar to but opposite of Think-Pair-Share. During this approach, students first complete a problem as a "team". Next they complete a similar problem as a "pair". Finally students complete problems "solo". This approach is designed to help students engage and succeed with problems which can initially be beyond the ability but can be solved within the context of a group, this is based on the concept of mediated learning. By allowing students to work on problems they could not do alone first as a team and then with a partner, they move to a position that they can do alone what at first they perhaps could not complete or could only do with help. As the students are looking up the calorie content for the food on their food logs, this approach will be a helpful way to differentiate and assist students who may feel overwhelmed with the task individually. Only the students who need support will take part in this approach. As a small group students will access designated websites and look up calories for foods on a sample list. As they become more proficient, they will move toward looking up their personal calorie intake.

Three Minute Review

In this approach, the teacher stops at any time during instruction or discussion, a timer or other signal may be used to begin, and gives students three minutes to review what has been said or ask or answer questions about the lecture. This activity will be useful when new vocabulary is being introduced. Students can then discuss, act out, illustrate, or choose a way that will help them to remember the new words they are learning. Since this activity is timed, the focus is not on the product it is on the varied way students choose to represent the vocabulary. After introducing and explaining carbohydrates, we will stop, drop our voices, and draw, sing, or perform like a carbohydrate.

Partners

The class gets divided into teams of four. Partners move to one side of the room. Half of each team is given an assignment to master to be able to teach to the other half. Partners work to learn the material, they may consult with other partner groups working on same material. Teams go back together with each set of partners teaching the other set. Partners can quiz and tutor teammates. Four stations will be set up around the room with each pair only visiting two stations. At each station, students will learn about serving sizes and caloric value of foods. They will then return to the foursome and teach the other members of the group proper serving sizes for given foods and have to create a day's menu, breakfast, lunch, dinner, and one snack and stay within a caloric goal.

Journals

Students will be keeping daily journals throughout this unit. They will begin journaling by keeping a daily food log. This will help students to become aware of what they are eating and how their bodies feel after they ate. By asking them to explain how they felt after they ate, students will start to become more in tune with how food affects not only hunger and or satiety levels, but also hopefully their energy levels and moods. As a class we will develop a rating system to record this. This will be done as a class so students have input to express their own satiety feelings, energy levels, and moods in their own words as we translate this information into a numerical rating system, i.e. rate your fullness level 1-still feel hungry to 5-couldn't eat another bite; rate your energy level 1-I felt like I wanted to sleep to 5- I felt like I could run around the block; rate your mood after eating 1-I was in a bad mood to 5-I felt happy. Students will also be keeping a daily activity log. This log will help show the students how much physical activity and thus how many calories they burn during the day. We will develop a rating system similar to the food log ratings to chart how physical activity makes them feel, once again helping students to learn and keep track of what their bodies are telling them. Finally, students will keep a sleep log. This sleep log will follow the same structure as the other logs helping students to recognize the importance of sleep for a healthy body.

Technology Integration

Recently, a growing number of researchers have published studies that provide substantial evidence that technology can play a positive role in academic achievement. ⁸ My students will be using technology while proceeding through this unit. As students study the digestive process, they will be using internet search procedures to locate information on this topic. After their research is complete, students will create power point presentations to share the information they have learned. Students will visit websites related to calories to determine the amount of calories in certain foods and the amount of calories burned during a variety of activities. In addition, I will use United Streaming to expose my students to a variety of videos on Nutrition.

Experiential Education

Students learn by doing. My students will take part in Yoga classes one hour a week. Exercise and yoga are about mind, body, and spirit. The ultimate goal is to achieve a balance in life. Experiencing Yoga will provide my students with an overall awareness of their bodies and will give them a positive outlook on physical fitness. Yoga will provide a variety of benefits to my students, including kinesthetic awareness where students will become aware of their bodies in space. It has been shown to improve self-esteem, physical health, and academic performance. By incorporating sound and movement it can be used as a springboard into education. Yoga not only will enable my students to strengthen and stretch, but also to focus their minds. You have to empower and excite them about being physically and mentally fit. To them, it's fitness, fun and feeling great.

My female students will also have the opportunity to participate in the program "Girls on the Run". This program's mission is to educate and prepare girls for a lifetime of self-respect and healthy living. Girls on the Run is a life-changing, experiential learning program for girls age eight to thirteen years old. The programs combine training for a 3.1 mile running event with self-esteem enhancing, uplifting workouts. The goals of the program are to encourage positive emotional, social, mental, spiritual and physical development. The Girls on the Run objective is to reduce the potential display of at-risk activities among its participants. Girls on the Run delivers the message to young girls through volunteer coaches and mentors. The 10-week character building program of experiential learning through running teaches very specific and well-defined social and personal skills. The program culminates in a non-competitive 5K run event which gives the girls a chance to shine and an overwhelming sense of accomplishment. ⁹

The Reading Basketball Association enables both boys and girls to participate in team sports. My students will be included on teams consisting of third, fourth, and fifth graders. The students benefit on a multitude of levels. Students are learning how to participate on a team and follow the rules of the game. They are learning social skills as they work together as a team toward a common goal. Students are interacting with students from a variety of grades and backgrounds. In addition to these benefits, students are engaging in physical activity in a safe environment.

Classroom Activities

My classroom lessons will follow the Understanding By Design, UBD, model. ¹⁰ The backward design model centers on the idea that the design process should begin with identifying the desired results and then work backwards to develop instruction. There are three main stages: identifying desired outcomes, determining acceptable evidence of competency (assessment), and planning instructional strategies and learning experiences that bring students to this competency level.

In stage one, Wiggins and McTighe refer to it as "enduring understanding" and includes the following elements, enduring value beyond the classroom, resides at the heart of discipline, requires uncovering abstract or often misunderstood ideas, and offers potential to engage students. Furthermore by answering key questions, "essential question" students deepen their learning about content. The enduring understanding and essential question are discussed prior to each daily lesson and are used to set-up or "open" the lesson for the day. At the end of each daily lesson, I will return to the enduring understanding and essential question. We will discuss the content of the daily lesson and this will act as the "closure" for each lesson.

Investigation One

Lesson Overview

During this lesson, students will learn about calories. This lesson will take place in the beginning days of the unit. It should take approximately three class periods during science. The students will have completed a Daily Food Log (Appendix B) detailing their food intake for three days and will need these on Day 3 of this lesson.

Enduring Understanding: Our bodies depend on the food

Essential Question: What is a calorie?

Materials

Class T-W-L chart, copies of "Learning About Calories" article (Appendix C) for each pair of students, plain piece of paper for each student, completed Food Log from each student (Appendix B), calorie counter website

Day One- 30 minutes/ Procedure

As a pre-assessment, together we will fill in a large, poster sized T-W-L (What do you THINK? What do you WANT to learn? What have you LEARNED?) chart about calories. More commonly thought of as a K-W-L chart (What do you KNOW) however some students may have misconceptions about the topic and I would like them to discover the truth through the lesson so I have replaced KNOW with THINK. During the pre-assessment, we will complete the "T" and "W" portions of the chart. Students will be given a few minutes to silently brainstorm ideas they think they already know about calories. Students will volunteer and I will place their thought on the large chart. All ideas are accepted as this is the way to get the students excited about the topic. After we have filled the think space, we will move onto "W". Once again students will be given a few minutes to brainstorm questions and will call out ideas they want to learn about calories. This sets the stage for what we will cover during the lesson. I will add pertinent questions to the chart to ensure that the content I want the students to discover is on the chart. When the classroom chart is filled in, students will receive an individual copy and will select 5 ideas from the think and want column to keep in their science folder. As students find the information that answers the questions they have personally chosen, they fill in the "L" section of their individual paper. This is a good way for students to take ownership over their learning. The classroom chart will be left hanging in the classroom. The "L" portion will be saved until the end of Day Three and act as a post-assessment.

Day Two- 45 minutes/ Procedure

We will begin Day Two with a review of Day One and the ideas students recorded. Then, students will participate in a "think-pair-share" activity. Students will be introduced to the term calorie. They will be given 2 minutes to "think" about what they think a calorie might be. After the think time, students will be placed into "pair" groups and will be responsible for reading the article, "Learning About Calories". Partners will "buddy read" article. After they have finished reading, students will write "Fast Five Facts". Each student will get a plain piece of paper and trace their hand. (You may need to model this and show students how to make hand larger.) Students will then write the word, "Calories" on the palm of the traced hand and one fact they have learned about calories in each finger. As the students are working, I will be walking from group to group ensuring that students are on-task as well as completing activity accurately. After students are finished, pairs will "share" their facts with each other and then other partner sets in the classroom. We will come together as a class to share the facts and clear up misconceptions. Students will be able to change or add facts to their "hands" during the discussion section. I will add in any facts gained from the book Eat, Drink, and Be Healthy¹¹ that the students did not discover on their own. After sharing, students can cut out hand and post in classroom.

Assessment

I will check the "hands" activity for completion and accuracy.

Day Three-45 minutes/ Procedure

Day three will begin with a quick review of our T-W-L chart and the information they learned during Day Two. Students will then need their completed Daily Food Logs (Appendix B). Students who were unable to complete the food logs will be given a completed log created by me. We will go to the school computer lab where each student will have internet access. Students will visit a calorie counting web site ¹². They will look up the food choices from their logs and add in the calorie amounts to their logs. The calories will be calculated for each meal, then each day, and then totaled for the three days the data was collected. Students will complete this using the team-pair-solo procedure. Later we will use the logs to graph the data. After we are finished calculating calories, we will return to our T-W-L chart. At this time, we will complete the "L" portion expressing what we have "Learned". Students will brainstorm for a minute or two while reviewing their work from the activities they have completed. They will give their responses and I will record them on the chart. After the chart is full, students will record the things that most excited them onto their individual charts.

Assessment

I will check for completion as an informal assessment

Investigation Two

Lesson Overview

During this lesson, students will be responsible for learning about digestion. This lesson will take place during the third week of the unit. It should take approximately seven 45 minute class periods. The lesson will take place in the school computer lab so that each student has access to a computer.

Enduring Understanding: Our bodies digest the food we eat.

Essential Question: How does the process of digestion work?

Materials

Students will need to have access to computers, The Digestive System (Appendix D)

Procedure

The class will go to the school's computer lab. Students will use a variety of search engines and non-fiction text to research information about the digestive system. Students will receive a copy of The Digestive System handout (Appendix D) to guide their research then hand in. After students have completed research, students will decide to work independently or in groups and then how they will report information to class. Several options can be but are not limited to: power point, posters, written play, poetry, model.

Assessment

Students will be assessed for completion and accuracy using The Digestive System handout. Students' presentations will be assessed based on a 5 point rubric.

Investigation 3

Lesson Overview

Students will learn that physical activity is important to a healthy lifestyle. They will learn that physical activity

has caloric value. Your body burns calories at rest and while active. Prior to this lesson, students will have completed a Daily Activity Log (Appendix E) for three days. Students will then use food log and activity log to check for a balance. This lesson will take approximately two 45 minute class periods.

Enduring Understanding: Our bodies need more than food to be healthy.

Essential Question: What types of activities will benefit you?

Materials

Daily Activity Log (Appendix E), calorie burned website, Daily Food Log (Appendix B), balances, blocks signifying calories.

Procedure

Students will need Daily Activity Log. Students who were unable to complete the activity logs will be given a completed log created by me. We will go to the school computer lab where each student will have internet access. Students will visit a calorie counting web site ¹³. They will look up the activity choices from their logs and add in the calories used to their logs. The calories used will be calculated for each activity, then each day, and then totaled for the three days the data was collected. Later we will use the logs to graph the data. Next students will check to see if their calories in are balanced with their calories out. Using balances and blocks representing calories, students will place blocks on one side of the balance to represent the calories they have eaten and blocks on the other side of the balance to represent the calories they have burned.

Endnotes

1. (Kluger 2008)
2. (Walt Larimore, Sherri Flynt and Halliday 2005)
3. (Walter C. Willett and Skerrett 2001)
4. (National Digestive Diseases Information Clearinghouse 2008)
5. (National Digestive Diseases Information Clearinghouse 2008)
6. (National Digestive Diseases Information Clearinghouse 2008)
7. (National Digestive Diseases Information Clearinghouse 2008)
8. (Foltos 2002)
9. (Run n.d.)
10. (Wiggins and JayMcTighe 2001)
11. (Walter C. Willett and Skerrett 2001)

12. (Calorie-Charts.net 2004)

13. (Department n.d.)

Teacher Resources

Calorie-Charts.net. 2004. <http://www.calorie-charts.net/> (accessed July 13, 2008).

This website is easy for students to negotiate with our logging in or setting up an account.

Center, Nutrition Information. *Keeping Your Kids Healthy*. 2006-2008.

http://www.education.com/reference/topic/KeepingKidsHealthy_Nutrition/?cid=60000.0021542&s_kwcid=TC-8364-27785371013-S-2928780513 (accessed July 13, 2008).

Connie Liakos Evers, MS,RD. *How to Teach Nutrition to Kids*. Portland: 24 Carrot Press, 2006.

A great resource for many kid friendly nutrition activities.

Department, Tooele County Health. *Calories Burned During Activity*.

http://www.tooelehealth.org/Community_Health/CVD/Calories_Burned.html (accessed July 14, 2008).

This website is kid friendly and contains a large variety of activities. You do not have to set up an account to access information.

Foltos, Les. *New Horizons For Learning; Technology and Academic Achievement*. December 2002.

<http://www.newhorizons.org/strategies/technology/foltos.htm> (accessed July 13, 2008).

Kluger, Jeffrey. "How America's Children Packed On the Pounds." *Time*, June 23, 2008: 68.

This article contains many facts and statistics that show the magnitude of this growing epidemic.

Mary L Gavin, MD. *Kid's Health*. March 2007. http://kidshealth.org/kid/stay_healthy/food/calorie.html (accessed July 13, 2008).

McKay, Sindy. *Happy and Healthy*. San Anselmo: Treasure Bay Inc., 2002.

National Digestive Diseases Information Clearinghouse. 2008. <http://digestive.niddk.nih.gov/ddiseases/pubs/yrdd/> (accessed July 12, 2008).

Pollan, Michael. *In Defense of Food An eater's Manifesto*. New York: Penguin Press, 2008.

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Run, Girls on the. *Educating and preparing girls for a lifetime of self respect and healthy living*.

<http://www.girlsontherunde.org/ourprogram.html> (accessed July 13, 2008).

This website details the information that is available to schools interested in incorporating "Girls on the Run" in their schools.

Schlosser, Eric. *Fast Food Nation*. New York: Houghton Mifflin, 2005.

Interesting book on the history and prevalence of fast food in the United States.

School of Public health, Univeristy ofCalifornia, Berkeley. *Children and Weight: What Communities Can Do*.
http://cnr.berkeley.edu/cwh/activities/child_weight2.shtml (accessed July 15, 2008).

Great suggestions for families to create healthier lifestyles.

Walt Larimore, MD, MPH,RD,LD Sherri Flynt, and Steve Halliday. *Super Sized Kids; How to Rescue Your Child From the Threat of Obesity*. New York: Time Warner Book Group, 2005.

An excellent resource to share with parents. This book has many healthy choices that adults can expose to students in order to start them on the road to a healthy lifestyle.

Walter C. Willett, M.D., and Patrick J. Skerrett. *Eat, Drink, and Be Healthy; The Harvard Medical School Guide to Healthy Eating*. New York: Free Press, 2001.

Great resource to learn about the building blocks of nutrition.

Wiggins, Grant, and JayMcTighe. *Understanding By Design*. Prentice Hall, 2001.

William V. Tamborlane, MD. *The Yale Guide to Children's Nutrition*. New Haven: Yale University, 1997.

Good source for specific details regarding children's nutrional and activity goals.

Appendix A

Standards

English/ Language Arts

Standard 1: Use written and oral English appropriate for various purposes and audiences.

Standard 2: Construct, examine, and extend the meaning of literary, informative, and technical texts through listening, reading, and viewing.

Standard 3: Access, organize, and evaluate information gained through listening, reading, and viewing.

Standard 4: Use literary knowledge accessed through print and visual media to connect self to society and culture.

Mathematics

Standard 1 Numeric Reasoning: Students will develop Numeric Reasoning and an understanding of Number and Operations by solving problems in which there is a need to represent and model real numbers verbally, physically, and symbolically; to explain the relationship between numbers; to determine the relative magnitude of real numbers; to use operations with understanding; and to select appropriate methods of calculations from among mental math, paper-and-pencil, calculators, or computers.

Standard 4 Quantitative Reasoning: Students will develop Quantitative Reasoning and an understanding of Data Analysis and Probability by solving problems in which there is a need to collect, appropriately represent, and interpret data; to make inferences or predictions and to present convincing arguments; and to model mathematical situations to determine the probability.

Standard 5 Problem Solving: Students will develop their Problem Solving ability by engaging in developmentally appropriate problem-solving opportunities in which there is a need to use various approaches to investigate and understand mathematical concepts; to formulate their own problems; to find solutions to problems from everyday situations; to develop and apply strategies to solve a wide variety of problems; and to integrate mathematical reasoning, communication and connections.

Standard 6 Reasoning and Proof: Students will develop their Reasoning and Proof ability by solving problems in which there is a need to investigate significant mathematical ideas in all content areas; to justify their thinking; to reinforce and extend their logical reasoning abilities; to reflect on and clarify their own thinking; to ask questions to extend their thinking; and to construct their own learning.

Standard 7 Communication: Students will develop their mathematical Communication ability by solving problems in which there is a need to obtain information from the real world through reading, listening and observing; to translate this information into mathematical language and symbols; to process this information mathematically; and to present results in written, oral, and visual formats.

Standard 8 Connections: Students will develop mathematical Connections by solving problems in which there is a need to view mathematics as an integrated whole and to integrate mathematics with other disciplines, while allowing the flexibility to approach problems, from within and outside mathematics, in a variety of ways.

Science

Standard 1: Nature and Application of Science and Technology

Standard 6: Life Processes

Standard 7: Diversity and Continuity of Living Things

Appendix B

Daily Food Log

Meal	Food	Calories	How did I feel after I ate
Breakfast			

Lunch

Dinner

Snacks

Appendix C

Our Bodies depend on the Food We Eat/ What is a calorie?

When people talk about the calories in food, what do they mean? A calorie is a unit of measurement - but it doesn't measure weight or length. A calorie is a unit of energy. When you hear something contains 100 calories, it's a way of describing how much energy your body could get from eating or drinking it.

Are Calories Bad for You?

Calories aren't bad for you. Your body needs calories for energy. But eating too many calories - and not burning enough of them off through activity - can lead to weight gain.

Most foods and drinks contain calories. Some foods, such as lettuce, contain few calories. (A cup of shredded lettuce has less than 10 calories.) Other foods, like peanuts, contain a lot of calories. (A half of a cup of peanuts has 427 calories.)

You can find out how many calories are in a food by looking at the nutrition facts label. The label also will describe the components of the food - how many grams of carbohydrate, protein, and fat it contains.

Some people watch their calories if they are trying to lose weight. Most kids don't need to do this, but all kids can benefit from eating a healthy, balanced diet that includes the right number of calories - not too many, not too few. But how do you know how many calories you need?

How Many Calories Do Kids Need?

Kids come in all sizes and each person's body burns energy (calories) at different rates, so there isn't one perfect number of calories that a kid should eat. But there is a recommended range for most school-age kids: 1,600 to 2,500 per day. Kids who are active and move around a lot will need more calories than kids who don't.

Most kids don't have to worry about not getting enough calories because the body - and feelings of hunger -

help regulate how many calories a person eats. But kids with certain medical problems may need to make sure they eat enough calories. Kids who are overweight might have to make sure they don't eat too many calories. (Only your doctor can say if you are overweight, so check with him or her if you're concerned. And never go on a diet without talking to your doctor!)

If you eat more calories than your body needs, the leftover calories are converted to fat. Too much fat can lead to health problems. Often, kids who are overweight can start by avoiding high-calorie foods, such as sugary sodas, candy, and fast food, and by eating a healthy, balanced diet. Exercising and playing are really important, too, because activity burns calories.

How the Body Uses Calories

Some people mistakenly believe they have to burn off all the calories they eat or they will gain weight. This isn't true. Your body needs some calories just to operate - to keep your heart beating and your lungs breathing. As a kid, your body also needs calories from a variety of foods to grow and develop. And you burn off some calories without even thinking about it - by walking your dog or making your bed.

But it is a great idea to play and be active for at least 1 hour and up to several hours a day. That means time spent playing sports, just running around outside, or riding your bike. It all adds up. Being active every day keeps your body strong and can help you maintain a healthy weight.

Watching TV and playing video games doesn't burn many calories at all, which is why you should try to limit those activities to 1 to 2 hours per day. A person burns only about 1 calorie per minute while watching TV, about the same as sleeping!

Appendix D

The Digestive System

What are the major organs in the digestive system and what are their functions?

Major organ

Major Organ What part it plays in digestion

Travel Diary - You are taking a ride through the human digestive system. Write a travel diary describing your trip. You must make at least three stops on your journey (you can describe more than three stops for extra credit). For each stop, describe where you are, what the digestive system is doing at that point and that place, and where you are going next.

Stop#1

Stop#2

Stop#3

Stop#4

Stop#5

Appendix E

Daily Activity Log

Day/Activity Minutes Calories burned How did I feel

<https://teachers.yale.edu>

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