

What Do Brad Pitt and Einstein have in Common?

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Overview

This curricular unit intended for 5th grade science or health students will focus on alternative ways of eating instead of following the Standard American Diet in order to become healthier. “The increasing prevalence and consequences of childhood obesity have prompted calls for broad public health solutions that reach beyond clinic settings. Schools are ideal settings for population-based interventions.” (Foster 2008) To that end, I believe children need to be exposed to vegetarianism and its various forms in school. Of course parents also play a major role in what their children eat. Children tend to eat the kinds of food that mom and dad eat and, if those foods are not healthy choices, the foundation for selecting nutritionally complete foods to eat will not be there. Many parents may not recognize that there are alternative ways of eating and so have not exposed their children to many vegetarian foods, or even realize that a vegetarian lifestyle can be quite healthful. This unit will provide that introduction.

Children have probably heard the word vegetarian, but have they been taught what it means, who are vegetarians, and why have they chosen to eliminate meat from their diets? Some children cannot understand why anyone would choose not to eat animal products, nor are they aware that a number of famous people are some form of vegetarian. This unit will expose children to vegetarianism, veganism, and eating raw foods. Children can use this information to make more informed choices about how they will decide to eat in the future. They can decide if one way of eating is more healthful than another. The children can also begin to observe how they feel after eating vegetarian foods.

Children can tell you what foods are good for them, vegetables, fruits, nuts, whole grains, but they are eating little of them. Instead, the children that I have observed are eating sandwiches with lunchmeat and cheese for lunch. They are eating chips, cookies, candy

and drinking sodas and over-processed juices. Few of them eat healthfully. After lunch in the afternoon they are restless, demonstrate limited concentration and complain of stomachaches and headaches. This is why I believe children need to learn about other ways of eating. By learning that many successful and healthy people are vegetarians, students will discover that vegetarianism, veganism and eating raw foods are viable ways of eating to attain and maintain better health.

Students will have multiple experiences that they will document in journals. They will record new vocabulary regarding obesity, vegetarianism, and their reactions to guest speakers and recipes made in the classroom. They will document what they learn about diseases caused by a diet high in fat, sugar and cholesterol. From their experiences in the unit students will write a poem, essay, and rap or play about what becoming a vegetarian would mean to them or draw an illustration or comic book.

Rationale

Children must learn more about real food and nutrition. It seems that as we advance in the 21st century we, as a society, are becoming less aware of proper nutrition and are becoming further away from knowing what real foods are. There needs to be a re-education of young people to understand what real, nutritious food actually is. I have noticed that most of the young children that I come into contact with are eating processed convenience foods that do not contain real nutrients. They are high in calories and low in nutritional value. Research shows that obesity among children is increasing. “The percentage of school-age children 6-11 that are overweight more than doubled between the late 1970s and 2000, rising from 6.5% to 15.3%. The percentage of overweight adolescents age 12 – 19 tripled from 5.0% to 15.5% during the same time period.”¹ Children need to be exposed to better, more healthful food choices, and those foods need to be available to them in school and in their neighborhood stores.

There are people who have alleviated obesity and disease through diet. Unfortunately, the mainstream culture has perceived adherents to vegetarianism, veganism, fruitarianism and raw foodists to be extremists or “oddballs”. This is despite the fact that many have improved their health, come off pharmaceuticals or even cured so-called incurable conditions. I feel that young children will opt for more healthful food choices if they have the opportunity to learn about them and have hands-on experiences preparing them.

Science Supports Benefits of Plant Based Diet

According to an article in Forum Nutrition, “A growing body of scientific evidence indicates that wholesome vegetarian diets offer distinct advantages compared to diets containing meat and other food of animal origin. The benefits arise from lower intakes of saturated fat, cholesterol, and animal protein as well as higher intakes of complex

¹ National Center for Health Statistics, Health, United States, 2002 with chart book on trends in the health of Americans. Overweight children and adolescents 6 – 19 years of age, according to sex, age, race and Hispanic origin: United States, selected years 1963-65 through 1999-2000. Hyattsville (MD): 2002. Table 71.

carbohydrates, dietary fiber, magnesium, folic acid, vitamin C and E, carotenoids and other phytochemicals. In most cases vegetarian diets are beneficial in the prevention and treatment of certain diseases, such as cardiovascular disease, hypertension, diabetes, cancer, osteoporosis, renal disease and dementia as well as diverticular disease, gallstones and rheumatoid arthritis.” (Leitzman, 2005).

In an article published in the British Medical Journal, research scientists wanted to know if the risk of death from ischemic heart disease (atherosclerosis or hardening of the coronary arteries so that adequate oxygen cannot get to the heart) is reduced because of “high intake of dietary fiber or by vegetarian diet.” About 11,000 women and men were studied over a 17-year period. The study began in 1973. The participants of the study were followed up until death, emigration or March of 1995, whatever occurred first. The results show there no significant difference in the mortality of the cohorts (participants in the study) and the general population due to the consumption of wholemeal bread (whole wheat or whole grain), however the study showed that eating fresh fruit daily correlated with significant reduction in mortality from ischemic heart disease much more strongly in participants than for the general population. Death in the fruit eating population was half that of the general population. Also, there was reduced mortality from cerebrovascular (relating to the blood vessels that supply the brain) disease and all other causes combined. (Key 1996) I interpret this to mean that eating fresh fruit daily is important for a healthier heart and in preventing hardening of the coronary arteries.

In a review of medical literature by Lilli B. Link (Cancer Epidemiology, Mailman School of Public Health, Columbia University) and John D. Potter (PHS Division, Fred Hutchinson Cancer Research Center, Seattle, Washington) it was stated that consumption of vegetables, raw or cooked, showed statistically inverse relationships with certain cancers. In addition, consumption of raw vegetables was more often inversely associated with esophageal, gastric, and breast cancers than cooked foods. (L.Link and J. Potter)

Since there is scientific research to show that eating a plant-based diet is beneficial to the health of human beings, why are nutritionists and our government reluctant to fully endorse eating a diet that emphasizes eating fresh fruits and vegetables and deemphasizes eating cooked foods and animal protein? According to Dr. Douglas Graham in his book *The 80/10/10 Diet* “the doctors and scientists who study nutrition, for the most part, are cooked-food eaters, and they see the world through a cooked food perspective... The very idea of diet of all raw food is unthinkable to most of them. Rarely do they even consider it.” Dr. Graham states further, “common sense does not support cooking, however, as not a single creature other than man cooks its food. In general, the animals that suffer from degenerative ‘human’ diseases are domesticated or caged ones that are routinely fed cooked food by their human caretakers.”

Weight Loss from Animal Based Diet

From the viewpoint of proponents of high animal protein diets such as the Atkins diet, obesity can be avoided by eating large amounts of meat and small amounts of simple or complex carbohydrates. The Atkins diet can affect weight loss due to decreased intake of

simple carbohydrates and fats that would be eaten with those carbohydrates. We know that weight can be lost by lowering calorie intake or by burning more calories through increased exercise. Any diet that limits portion size can induce weight loss. However the Atkins diet can cause some adverse reactions such as constipation, halitosis, headaches and hair loss. (Ornish 2004)

“A more healthful and evidence-based choice is to substitute simple carbohydrates with complex (unrefined) carbohydrates including whole foods such as fruits, vegetables, legumes (including soy products) and whole grains (such as brown rice and whole wheat flour). These are rich in fiber, which enhances satiety without adding significant calories. Fiber also slows the absorption of food, thereby preventing blood glucose from rising too rapidly and reducing insulin surges. Eating a high glycemic index food along with mostly low glycemic index foods may reduce the overall glycemic load of the meal. Body weight is inversely associated with consumption of dietary fiber and carbohydrates and positively associated with protein intake (11) Meat has virtually no dietary fiber.”²

Anecdotal Evidence for Alternative Ways of Eating

If given a choice between finding the science to support the need to eat a plant-based diet and finding so-called anecdotal information to support that need, I would pick anecdotal any day. Why? It is easier to understand, and I can relate to the stories told by those who have experienced the benefits of eating a plant-based diet. Also, I have met a number of people who have improved their health by changing to a plant-based diet, gone to lectures given by people who have healed themselves of serious illnesses by eating fresh fruits, vegetables, and juices, and have read their books on how eating a plant-based diet helped them on their journey to restored health. Anecdotal seems to imply that the results that one person experienced are not sufficient enough or are only true for that person and therefore won't necessarily occur in others, but I feel that a healed person is great evidence that there is validity in the method used to attain those results.

Last year I met a quite vibrant young man who is the author of several books on the topic of eating a raw foods diet. He was such a picture of health, but that was not always the case. I have his permission to relay some of his story about his journey to health. He does so in much a better and more humorous way than I ever could, so I recommend reading any of his books. Paul Nison followed the typical Standard American Diet with no apparent health concerns except occasional stomachaches, headaches or colds until his body sort of went tilt. Then he began to experience worse stomachaches and more colds. He went to the doctor and was told he had food poisoning. He was given medicine that he gladly took in the hope of being cured. The pain continued for several weeks, and he constantly went to the bathroom, lost lots of weight, had tests conducted, and eventually developed bloody stool. Subsequently, the doctor diagnosed ulcerative colitis. Based on the doctor's recommendation, he would stop eating dairy, take prescribed drugs, and feel better after a few weeks. Then the doctor would okay the eating of dairy again.

² Dale Ornish MD, “Was Dr. Atkins Right?” Journal of the American Dietetic Association 104 (2004): 537-542.

Unfortunately he would, but only to get sick again. This continued until Paul began to see the connection between how he felt when not eating certain foods (eggs, meat, and sugar) and how he felt when he ate those foods that his doctor said they were fine to eat. He realized that he felt better when he did not eat them. He continued to make changes in his diet that lessened the number of attacks of colitis. He went on an 80 percent raw food diet and felt even better, yet when he informed his doctor, she told him that raw foods were not good for his condition. Despite this Paul persevered until he went 100 percent raw. At that point, his ulcerative colitis went away. Today Paul continues to develop as a raw food health advocate and an author who includes the emotional and spiritual facets of life in writings that assist those on a quest to improve their health.

Next I'd like to turn to Arnold of "Arnold's Way." About two years ago, while I was on sabbatical, I volunteered in Arnold's store/café in Lansdale, Pa. because I wanted to know learn about raw food preparation, and I had already attended some events at the store. Arnold's path to becoming raw is rather interesting. He started out as a mailman. Then he went on to run a successful vegetarian restaurant in the Manayunk section of Philadelphia, yet he was not a vegetarian. He followed the standard American diet. When he was about forty-five years old he began experiencing chest pains that went on for months. Eventually, Arnold's doctor sent him to the hospital because he was exhibiting symptoms of a heart attack. After lying in an emergency room for two hours, he left after deciding that the hospital was not the right place for him since he did not like what he saw and heard going on around him. He made up his mind that he needed to take charge of his own health. So he merely began to do rebounding (bouncing on a mini trampoline) and to eat salads. He also became of student of herbs, vitamins, shiatsu massage, and reiki. His studies led him to a course by T.C. Fry who was a proponent of Natural Hygiene. From his studies of Fry's work, he transitioned from eating a regular diet that by this time included salads, directly to strictly eating a raw foods diet. Once he started eating raw he decided he could no longer continue to run a vegetarian restaurant in good consciousness. So, he closed shop and opened his store/café where his focus was to be raw food eating.

Arnold is now sixty-one and young people, less than half his age, have difficulty keeping up with him. He enjoys physical activity such as rock climbing, cycling and hiking. He chose not to be a victim, but to take responsibility for his own health. Along the way his store has become somewhat of a mecca for those curious about embarking on the raw food path for various reasons. Arnold considers every moment to be a "loving, caring moment," so, to that end; he has chosen to be of service to others by sharing information with many suffering from an assortment of health challenges. At Arnold's monthly potluck I have heard a number of people share their experiences about how going raw has aided them in regaining their health. He is working on a project with T. Colin Campbell to record the health benefits of people whose diet consists of raw foods. They want to collect anecdotal evidence to function as a reference for others. In the process Arnold has recorded one hundred forty-five video accounts on You Tube.

The purpose of my curriculum unit is to expose fifth grade students to the connection between obesity and disease and to get them thinking about the dietary causes of obesity.

As I can testify, changing one's diet or eating lifestyle is one of the most difficult endeavors any person can undertake, but it is possible. I have been making changes in my diet for many years. As far as the eating of flesh, I eliminated eating red meat back in the eighties, but continued to eat poultry. About two years ago, I stopped eating chicken, yet I still eat turkey occasionally and some seafood. I am eating more raw fresh fruits, vegetables and greens. I have noticed that I actually do feel better when I eat raw, yet I have continued to eat cooked foods. Just recently I went for a physical only to discover that my blood pressure reading was higher than I expected since I have been using Chinese herbal medicine to keep it under control. So I have decided to focus on a raw vegetarian diet as a means of getting it back to normal. I believe that changing one's diet completely requires getting and facing the facts, gaining knowledge, daring to be different, and even encountering trials and errors in order to discover what works for an individual.

My Intention

My intention is to provide children with information about alternative ways of eating so that they will be better prepared in the not too distant future to decide how they could eat to remain healthy. My desire is not to turn anyone into a vegetarian, but to help children to be aware that how poorly or well they are feeling stems from what they eat. They must learn to listen to their bodies, just as I am, and eat those things that give them health and vitality. Hopefully, students will become more aware that what they eat affects how they feel and that better choices of foods can help them feel more vibrant and healthy.

Children need to learn what vitamins, minerals and amounts of proteins are in fruits, vegetables, nuts and seeds so that they can make educated decisions about what to eat to be healthy. It is apparent that the Standard American Diet is not working for many adults and children, so why not explore eating a plant based diet through vegetarianism and raw foods? It is important for children to know they have choices concerning eating and that they can affect the vibrancy of their health, thinking and behavior by making different, more healthful food choices.

In this curriculum unit children will learn about well-known vegetarians of the past (Leonardo da Vinci, George Bernard Shaw, Albert Einstein and Mahatma Gandhi) and modern day vegetarians (Dre Andre Benjamin of Outkast, Brad Pitt, Carrie Underwood of American Idol, and Russell Simmons.) They can do research to find out why some well-known people became vegetarians.

. “The average longevity of a meat eater is 63. I am on the verge of 85 and still work as hard as ever. I have lived quite long enough and am trying to die, but I simply cannot do it. A single beef steak would finish me; but I cannot bring myself to swallow it. I am oppressed with a dread of living forever. That is the disadvantage of being a vegetarian.” George Bernard Shaw

“I was raised on a dairy farm and ate plenty of meat and eggs until about twenty years ago. I started doing nutritional research and a decade or so after that my

family made some major dietary changes. I'm just paying attention to what the data is telling me. The scientific evidence came first." T. Colin Campbell

Children need to know what about eating animal products can be problematic and potentially harmful to the body. There is a connection between the excessive saturated fats found in meats, dairy and eggs and high cholesterol and hardening of the arteries. As stated in the Canadian Journal of Diet Practice and Research, "Well-planned vegan and other types of vegetarian diets are appropriate for all stages of the life-cycle including pregnancy, lactation, infancy, childhood, and adolescence. Vegetarian diets offer a number of nutritional benefits including lower levels of saturated fat, cholesterol, and animal protein as well as higher levels of carbohydrates, fiber, magnesium, potassium, folate, phytochemicals and antioxidants such as vitamins C and E. Vegetarians have been reported to have lower body mass indices than non-vegetarians, as well as lower rates of death from ischemic heart disease, lower blood cholesterol levels, lower blood pressure, and lower rates of hypertension, type 2 diabetes and prostate and colon cancer." Students will learn that alternative eating - vegetarian and raw vegan - can lead to better health and can lead to lower body mass and weight loss.

Objectives

The goals of this research are to have students become aware of the growing problem among children of being overweight and/or obese and to learn there are more healthful and nutritious ways of eating than the standard American diet. They will learn what is causing obesity in children as well as what diseases or conditions manifest due to obesity. They will learn about what it means to be a vegetarian, and that vegetarianism has various forms that can help children avoid obesity and disease. The students will learn that vegetarian food ranges from the simplistic, such as eating plenty of fresh fruit, to the gourmet such as eating raw vegan pizza or apple pie. They will learn that vegetarian food is more nutrient dense than the processed food they mainly eat. They will have several opportunities to help prepare vegetarian or raw vegan dishes.

Strategies

Students will complete the following assignments, hands-on activities and performance tasks during this unit.

1. Journal: Students will keep a journal on the topics of obesity and vegetarianism. Students will write new vocabulary terms encountered such as obesity, vegetarianism, vegetarian, vegan, lacto-ovo vegetarian, raw foodist, etc. Students will write how they feel about the idea of following one of these diets at the beginning of the unit, and again at the end of the unit, to discover if they have changed. Students will keep notes on new information as it is learned.
2. Students will examine data that relates to body mass index. They will examine data to learn what is considered normal weight, overweight and obese. Students will examine data to find the connection between weight and illness and disease.

3. Students will research the Internet to learn about famous vegetarians (e.g., Leonardo da Vinci, George Bernard Shaw, Mahatma Gandhi, Dre Andre Benjamin of Outkast, Brad Pitt, Carrie Underwood, etc.) to discover their reasons for becoming vegetarians. Students will write brief descriptions to characterize the reasons that these famous vegetarians give for following a vegetarian diet.
4. Guest speakers will be invited to share their experiences regarding vegetarianism and/or being raw vegans. Students will write questions regarding their concerns for the guests. They will engage in discussions. They will respond in their journals to the impact the speaker had on them.
5. Students will conduct research to learn what diseases are caused by a diet that is high in fat, sugar and cholesterol. Students will also research diseases associated with obesity. Students will create charts and graphs based on their research.
6. Students will read children's books on vegetarianism to learn what it means to be vegetarian. A book will be assigned to groups of four children. Each group will read the book and make a presentation. Students can write poems, newspaper articles, comic books, posters, illustrations or reports for their books.
7. Students will assist the teacher to make vegetarian dishes from simple recipes. Students will make guacamole and learn about the nutrients in avocados. Students will write in their journals about their reactions to guacamole and decide if they would make it at home.
8. Students will assist the teacher in making green smoothies. We will use raw green leafy vegetables such as kale or collard greens, pears, apples, bananas, dates and water and a high-powered blender. Students will predict whether they think they will like the smoothie before tasting and record their reaction in their journals.
9. Student will make up a survey to be administered to their family on the topic of food choices, diet, weight and illness that they have, or experience, frequently. Students will examine results to discover any relationships between diet, weight and illness.

Assessments

Rubrics

- 5- Outstanding
- 4 - Very Good
- 3 - Good
- 2 - Making progress
- 1 - Needs Improvement

Following Directions

- 5 - I followed the directions, stayed on task and helped other students
- 4 - I followed the directions but I had to be reminded to stay on task.
- 3 - I was frequently off task.
- 2 - I did not follow the directions.
- 1 - I did not listen to the directions, so I did not know what to do.

Use of resources

- 5 - I was able to complete my work independently.
- 4 - I was able to complete the project with help from others.
- 3 - I was able to find most of the material I needed to work on the project.
- 2 - I was able to find some of the material I needed to work on the project.
- 1 - I was unable to find the information I was looking for.

Classroom Activities

Students will complete a K-W-L chart answering the question “What is vegetarianism.”

Sample Lesson Plan 1

This is a lesson plan that teachers can use to introduce students to vegetarianism.

Grade level: 5

Subject: Health

Duration: 45 minutes

OBJECTIVE: By the end of the lesson, students will be familiar with the definition of vegetarianism and its various aspects.

MATERIALS: Chalkboard, student notebooks.

INTRODUCTORY LESSON:

- I. Definition of Vegetarianism:
Vegetarianism is the abstinence from meat, fish and fowl.
- II. Why people are vegetarian:
 - A. Compassion for animals: Many people do not want to kill or harm animals. For example, Albert Schweitzer and Mahatma Gandhi extended their compassion for humans to animals also.

- B. Aesthetic considerations: Some individuals do not like the taste or appearance of meat.
- C. Ecological reasons: Every aspect of meat production, from raising livestock to slaughterhouse operations, presents ecological questions. It takes more land to produce protein through meat than through vegetables or grain. One acre of land produces 7.9 times more oats than beef and 9.8 times more broccoli than beef. Two-thirds of all cropland in the U.S., about 300 million acres, is devoted to growing feed for animals whose meat we eat. Excess nutrients – fertilizers and animal waste – washing off from these farmlands pollute waterways. (Horton, Tom, The Baltimore Sun, 11/25/84.) In addition to issues with land and water resources, other environmental problems resulting from meat production include soil erosion, deforestation, and decreasing energy supplies.
- D. Spiritual reasons: For example, many Seventh-day Adventists, Jains, and Hindus are vegetarians. Some members of the Jewish base their vegetarianism on Biblical laws commanding compassion for animals.
- E. Health Reasons: A considerable body of scientific data suggests positive relationships between vegetarian diets and risk reduction for several chronic degenerative diseases and conditions, including obesity, coronary artery disease, hypertension, diabetes mellitus, and some type of cancer. (Journal of the American Dietetic Association, Nov. 1993, Volume 93, Number 11.)

One study demonstrated reversal of even severe coronary artery disease by using a combination of a vegetarian diet deriving less than 10% of its energy from fat, smoking cessation, stress management, and moderate exercise. (Journal of the American Dietetic Association, Nov. 1993, Vol. 93, No. 11.) It is important to have good habits in each area.

- F. Economic considerations: Meat is often too expensive for people.
- G. Influence of family, friends and famous people:
Did you know all these people were or are vegetarians? Leonardo Da Vinci, Albert Einstein, “Mr. Rogers,” Leo Tolstoy, George Bernard Shaw, Mahatma Gandhi, Isaac Bashevis Singer (Nobel Prize Winner), Sylvester Graham (inventor of graham cracker), Louisa May Alcott (raised as a vegetarian) Plato, Pythagoras, Plutarch, Albert Schweitzer, k.d. lang (country-rock singer). Linnea Quigley (horror actress), Sara Gilbert (tv actress)...

III. Common Vegetarian Foods

Macaroni and cheese, spaghetti, pizza, eggplant parmesan, vegetable soup, pancakes, oatmeal, grilled cheese, bean tacos, vegetable lo mein, French toast, scrambled eggs, French fries, vegetable pot pie, bread, yogurt, cheese lasagna, peanut butter and jelly, cottage cheese, fruit salad... (Depending on the type of vegetarian, dairy products and eggs might not be consumed.)

IV. Some vegetarians eat:

Tofu, tempeh, bulgur, lentils, millet, tahini, falafel, nutritional yeast, whole wheat flour, wheat germ, sprouts, chickpeas, tamari, kale, collards, carrot juice, barley, rice cakes, carob, splits peas, kidney beans, soy burgers, kiwi fruit, papaya, blintzes, curry, nut loaf, guacamole...

V. Some vegetarian nutrition

1. Vegetarian foods high in fat include cheeses, butter, avocado, oil, nuts, whole milk, and eggs.
2. Sources of calcium in a vegetarian diet include low-fat milk and dairy products, kale, collards, broccoli. Brussels sprouts, tofu, almonds, and tahini (sesame butter).
3. Sources of iron in a vegetarian diet include watermelon, collards, lentils, kale, oatmeal and broccoli.

VI. Developmental Activity (optional assignment):

Students can write essays on suggested topics: vegetarianism and health, vegetarianism and me, why people become vegetarian, what famous people in history have been vegetarian and why, interview a vegetarian, etc.

Sample Lesson Plan 2

What is BMI?

Subject areas: Health, math, and science

Duration: 45 minutes (may need more time to compile graphs)

Objectives:

1. Students will learn about body mass index (BMI)
2. Students will calculate their BMI using a tool from the KidsHealth website.

http://kidshealth.org/parent/growth/growth/bmi_charts.html

3. Students will graph to display class data.

Materials:

1. Graph paper
2. Internet access
3. Calculator
4. Journal

Procedure: (Information on BMI is from cdc.gov)

1. It is important to begin by explaining that weight can be a touchy subject with some people therefore it is necessary to remind the students to be respectful of others.
2. Explain that body mass index (BMI) is a number calculated from a person's weight and height. BMI is one way to denote the fatness of an adult or child. In children it is used to identify overweight or at risk for being overweight. BMI does not measure fat directly, but it does show a relationship to more direct measurements of fat, such as underwater weighing or calipers.
3. Explain the formula for finding BMI: $\text{weight (pounds)} / [\text{height (inches)}^2] \times 703$. This means divide weight in pounds by height in inches squared and multiply by 703.
4. Explain that once they find their BMI, it will be plotted on a graph to find the percentile ranking. These percentiles are used to assess size and growth patterns in children. The percentile shows the position of the child's BMI number among children of the same sex and age.
5. The students can find their own BMI then they can verify it by using the BMI calculator at kidshealth.org.
6. Next have students write their BMI on a 3 x 5 card (without names) to be collected. Write the data on chart paper. Then explain to the students that they will create a graph with the class data.
7. It is important to explain that BMI is just one indicator for fat and it does not take into consideration the person's body type. A child could be muscular and not be fat, still fall into at risk for overweight percentile. Also it should be reinforced to the students they are still growing and at any given time they could fall into any of the categories. Let them know that the goal is to always feel healthy, strong and vibrant.

Weight Category	Percentile Range
Underweight	Less than the 5 th percentile
Healthy weight	5 th percentile to less than 85 th percentile
At risk for overweight	85 th to less than 95 th percentile
Overweight	95 th percentile

8. Finally, the students can discuss the class results as a whole to find if their BMI's lie in the healthy range or if they fall in the underweight, at risk for overweight, or overweight percentile. They can set goals for the future, such as remaining in the healthy range or moving into the healthy percentile. They can write in their journals such goals and share only if they feel comfortable.

Sample Lesson Plan 3

Are All Vegetarians the Same?

Subject: Science and health

Duration: 45 minutes

Objectives:

1. Students will learn about the various types of vegetarians.
2. Students will determine what foods are suitable for each type.
3. Students will work in groups to make collages that show what foods a particular type of vegetarian can eat.
4. Each group will make an oral presentation about their collage.

Materials:

1. Photographs from magazines or drawings of different types of food.
2. Poster board or construction paper for making collages.
3. Glue sticks
4. Markers

Procedure:

1. It is necessary to explain to the students that all vegetarians are not exactly alike since some will eat certain foods that others will not, although all true vegetarians refrain from eating meat. In this activity students will learn about six classifications of vegetarians.
 - a. Pescatarian is a relatively new term to describe those people who will eat the flesh of fish but not other meats. These are usually people who may aspire to some form of vegetarianism.
 - b. Lacto-ovo vegetarians do not eat meat, but they will eat dairy products and eggs. Lacto is from Latin for milk and ovo is from Latin for egg.
 - c. Lacto-vegetarians will eat dairy, but will not eat eggs.
 - d. Ovo-vegetarians will eat eggs, but will not eat dairy.
 - e. Vegans will not eat meat nor will they eat dairy products or eggs. They will not eat processed foods containing any animal products. They may tend to overeat meat substitutes in the form of soy. (Too much soy in the diet may be problematic in some due to isoflavones. “Researchers at the US Toxicological Laboratory in Arkansas found that the thyroid-depressing substances are isoflavones, the estrogen-like compounds found plentifully in the soybean.”³) Some vegans will not wear clothing items, such as leather or fur that are made from animals.
 - f. Raw foodists will only eat fresh fruits, vegetables, greens, seeds, and sprouted grains, so-called live foods. They do not eat food heated above

³ Sally Fallon and Mary G. Enig, “Soy: the Dark Side of America’s Favorite ‘Health’ Food.” <-[http:// www.westonaprice.org/soy/darkside.html](http://www.westonaprice.org/soy/darkside.html)>.

105° since they believe vital enzymes are greatly reduced in the cooking process and nutrients are lower in value.

2. Prior to starting this activity, have each student collect five to ten photographs from magazines of various types of food. They will work in cooperative groups of four students to pool their pictures.
3. To assess that the students understand what the different types of vegetarians will and will not eat, assign each group of students a particular type of vegetarian, for example, vegan. Then from their pool of pictures the students have to decide which foods that vegetarian would include in their diet. They will discuss what foods can be included and which cannot and why. The recorder can make a list of those foods. Then they will arrange the photos on construction paper or poster board to make a collage. Encourage them to be creative. Each group can make an oral presentation of their collage in a fun way, for example, as a song or rap. After all presentations, display the collages in the classroom.
4. Assessment is based upon having completed all the steps of the activity, comprehension and creativity.

Annotated Bibliography for Teachers

Campbell, T Colin, and Thomas M. Campbell II. The China Study
Nutrition researcher presents facts about why the vegan diet prevents and reverses diseases and promotes excellent health. Based on the largest human nutrition study ever conducted.

Cousens, Gabriel. Conscious Eating. Berkeley: North Atlantic Books, 2000.
The author believes food choices affect people on many levels and that people must be aware of how food affects them physically, emotionally, and spiritually. He makes a case for vegetarianism as diet choice

Foster, G.D., S. Sherman, K.E. Borradaile, K.M. Grundy, S. Vander Veur, J. Nachmani, A. Karpyn, S. Kumanyika, and J. Shults. "A Policy-Based School Intervention to Prevent Overweight and Obesity." Pediatrics. 121 (2008): e794-e802.

Graham, Douglas N. The 80/10/10 Diet. Key Largo: FoodNSport Press, 2006.
The numbers in the title represent carbohydrates, proteins and fats respectively that Graham says is the ideal ratio of the three nutrients.

Leitzman, C. "Vegetarian Diets: What are the Advantages?" Forum Nutrition 57 (2005): 147-156.

This article is about the benefits of a vegetarian diet over a meat eating diet.

Link, L. and J. Potter, "Diseases Associated with Raw versus Cooked Vegetables and Cancer Risk." Cancer Epidemiology Biomarkers Preview 13(9): (2004) 1422-1435.
This review of twenty-eight studies examines the relationship between raw and cooked vegetables and whether they affect cancer risk differently

Melina, Vesanto, and Brenda Davis. The New Becoming Vegetarian. Summertown: Healthy Living, 2003.

This is a comprehensive guide to becoming vegetarian written by a registered dietitian.

Nison, Paul. THE RAW LIFE: Becoming Natural in an Unnatural World. West Palm Beach: 343 Publishing, 2000.

This book was written to give support to those wanting to gain health through eating a raw food diet. It contains before and after pictures of people who have gone raw, and there are interviews with experienced raw food advocates.

Nison, Paul. The Raw Food Formula for Health. Summertown: Book Publishing Company. 2008.

This book contains the author's four-step formula for gaining health and preventing disease and that includes acknowledging the emotional and spiritual aspects of life.

Robbins, John. Diet for a New America. Novato: New World Library, 1987.

The author, an heir to the Baskin-Robbins ice cream empire, reveals practices of meat and dairy industries.

Sabate', J. "The Contribution of Vegetarian Diets to Health and Disease: a Paradigm Shift?" American Journal of Clinical Nutrition 78 (2003) 5025-5075.

Stoycoff, Cheryl. Raw Kids: Transitioning Children to Raw Food Diet. Living Spirit Press.

Guidance, practical tips, resources for people wanting to improve their children's diet

Web Resources

<http://www.rwjf.org/files/research/obesityfs.pdf>

This website has a combination of research and policy information on childhood obesity

<http://www.westonaprice.org/soy/darkside.html>

This website contains an article about potential problems caused by overeating soy products.

Student Reading List

Bass, Jules, and Debbie Harper. Herb the Vegetarian Dragon. Cambridge: Barefoot Books, 1999.

A peace-loving vegetarian dragon tries to convince other dragons to stop killing and eating townspeople.

Boutenko, Sergei, and Valya Boutenko. Eating Without Heating: Favorite Recipes from Teens Who Love Raw Food. Ashland: Raw Family, 2002.

This is a “non-cook” book written by teenagers that converted to a raw diet. They explain how they make tasty food by appealing to five tastes—sweet, sour, salty, spicy, and bitter.

Bradley, Ann. Cows are Vegetarians: A Book for Vegetarian Kids. A Bradley, 1992.

This book examines the reasons for becoming vegetarian and how to cope with non-vegetarian friendly people.

Charney, Steve, and David Goldbeck. The ABCs of Fruits and Vegetable and Beyond.

Woodstock: Ceres Press, 2007.

This book contains poems, geography, recipes, jokes and riddles and other facts about fruits and vegetables.

Lovie, Arlett, and Michael Twinn. Who Cares About Animal Rights? Child’s Play International, 1992.

The book is written from the standpoint that all living creatures have their place, have the right to life and survival, and the right to human respect

Smith, Dick K. Babe—the Gallant Pig. New York City: Crown, 1985.

This is a story of farm animals that can talk to each other. Farmer Hogget won Babe and his wife intends to eat him for dinner. After receiving lessons on how to be a “sheepdog,” he touches Mrs. Hogget’s heart.

Smith, Greg Leitich. Tofu and T. Rex. New York City: Little, Brown, 2005.

This is a story about a girl who is vegan and her experiences with non-vegetarians

Urbach, Jourdan. Leaving Jeremiah. Waldoboro: Goose River Press, 2003.

Written by an eleven-year old, this is a story of an orphan that falls into a black vortex in the Bermuda triangle.

“**The Fruit Pages.**” 23 Mar. 2008 <<http://www.thefruitpages.com> >.

This website has kid friendly information on “everything you want to know about fruit” from why eat fruit to fruit nutrition facts to fruits from all over the world

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www.kidshealth.org

This website has valuable information on health for children, and it has an easy to use BMI calculator.

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Appendix: Pennsylvania literacy and mathematics standards met by this unit.

Standard 1.1 Learning to read independently

1.1 F Identify, understand the meaning of and use correctly key vocabulary from various subject areas.

1.1 G Demonstrate after reading understanding and interpretation of both fiction and nonfiction text.

Standard 1.2 Reading critically in all areas

1.2 B Use and understand a variety of media and evaluate the quality of the material produced.

Standard 1.4 Types of writing

1.4 A Write poems, plays and multi-paragraph stories.

1.4 B Write multi-paragraph informational pieces (e.g., essays, descriptions, letters, reports, instructions).

Standard 1.6 Speaking and listening

1.6 A Listen to others; ask pertinent questions.

1.6 F Use media for learning purposes.

Standard 1.8 Research

1.8 A Select and refine a topic for research.

Standard 2.6 Statistics and data analysis

2.6 A Organize and display data using pictures, tallies, tables, charts, bar graphs and circle graphs.

2.6 B Describe data sets using mean, median, mode and range.

2.6E Construct and defend simple conclusions based on data.

Standard 4.3.7 Environmental health

4.37 B Describe how human actions affect the health of the environment.

Standard 4.4.7 Agriculture and society

4.4.7 A Explain society's standard of living in relation to agriculture.

Standard 4.8.7 Humans and the environment

4.8.7 B Explain how people use natural resources.

Standard 10.1 Concepts of health

10.1 C Analyze nutritional concepts that impact health

Standard 10. 2 Healthful living

10.2 B Explain the relationship between health-related information and consumer choices.