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Things, Foods, and How We Know

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Introduction

In this unit my class will explore the use of science in anthropology, which inevitably leads to the use of science in the fields of history and archeology. Specifically, the unit will be about the study of Native American traditions surrounding the preparation and consumption of food. This unit will be presented at the beginning of the year with the dual purpose of introducing my students to some Native American cultures in preparation for Hispanic heritage month and of introducing my students to the ways in which information is scientifically collected, analyzed, and distributed.

Part of the science curriculum in every topic of science taught in Connecticut is the use and evaluation of information. In Connecticut these ideas are generally included under the topic of science and technology in society. The applicable Connecticut science standards may be found in an appendix at the end of this unit. Connecticut science standards are based on the science standards that were written by the National Academies of Science, Engineering and Medicine, so your state probably will have similar standards.

This curriculum unit models the process of scientific inquiry. Scientific inquiry is a major feature of all of my classes, so this unit at the beginning of the year is an extremely useful introduction to the process. The unit begins with an introduction to observation. The purpose of this section is to increase the students' awareness of the world around themselves. My students, as many high school students are, are still in a very egotistical phase of development and need to be trained to observe the world around them. In the next section the student's observational skills are put into practice. In that section we will begin to study some "things", food related items in particular. In the process of scientific inquiry, this is the part where the curiosity and, therefore, the inquiry starts. This is the place where questions begin to be asked. The next part of the unit, the "what do the things tell us" part of the unit, is where we start to think more deeply about the questions that came out of the things part of the unit. In this section we also start to think about what the objects can tell us. As it happens, all of the objects the students will study in this unit will have something to do with food preparation and eating. The next logical step, then, is to think about what types of foods individual cultures were eating such that they needed to make and use these food tools. In this section the students will choose a culture to research. They will try to discover what types of food were being eaten by their chosen culture, but they will also begin to study the ways in which information about cultures and peoples is gathered. This is one of the data collection phases of this unit. After the students have researched another culture's eating habits,

they will research their own eating habits. They are, after all, still in an egotistical phase of development. After the food data has all been recorded, it will need to be analyzed. However, as this unit will be presented at the beginning of the year, the students will need some tools to help them analyze their data. In this case, they will need some nutritional guidelines. In this section, good food and good nutrition, the students will learn about the parts of a balanced diet. Using this new tool, the students will analyze the nutritional content of the food choices made by the culture they researched and the food choices that they made for themselves. The last piece of the curriculum unit is a conclusion and a new beginning. The students will look at their own diet and the diet of the culture that they studied and develop a new diet for themselves based on the results of the nutritional analysis of the two diets.

Observations

The first part of this unit is about learning to gain information about the world around us. Naturally, there are many ways in which humans perceive the world. Because of the way that our brain works, much of the information we receive is subliminal or becomes subliminal. This part of the unit is designed to teach the students to train themselves to notice the information they are receiving. In other words, they are training themselves to see the subliminal. In this section you will find the projects and experiments which will help the students to do this.

The first project is a classic science experiment. An item is placed into a sealed box, any opaque box will work. The students may do anything they want to do to the box except open it. Their task is to describe and, if possible, identify the object in the box. This exercise is training for the exploration of objects in the "things" section of this curriculum unit.

The second project is related to the first, but it is a bit different. Give the students an object that they may see, but give it to them out of context. The students would then have to describe the object and propose possible uses for the object based on its properties. Some examples of objects might be the plastic endcap of a shoelace without the rest of the lace, or half of a hinge, or the end of a ball point pen that prevents the ink tube from falling out. The TV show "ask this old house" does something similar with construction tools. This is a very good exercise to do before the students see the actual object in the next section of this unit because the exercise will train them to think about how to look at an object.

Things

Things are an integral part of our lives. We use things from the moment we are born and have them with us long after we die. Things are part of our culture, and things make our culture. As such, things can point an observer to many aspects of daily life. In this section, the students will be exposed to many things that are used or have been used traditionally by several groups of indigenous American peoples. This unit, however, does not have to include more than one group of indigenous people. In my case, the unit will focus on the Inca, the Maya, the Aztecs, and the coastal peoples of southern New England. These populations cover most of the places from which I have students of indigenous descent.

The idea behind this section is to introduce the students to various instruments and have the students start to think about what can be learned from the tools. This section does not yet involve ideas about what the things are used for; it is simply an observatory phase of the unit. It should draw on some of the skills learned in the observation part of this unit.

The students should be allowed to examine some food related objects from a culture that they are studying. In my case, we will probably go to the Peabody Museum of Natural History to do this because they have a far larger collection of artifacts than I do. You will need to find some local source of artifacts or accurate reproductions in your area. In dire straights, you may be able to substitute photographs for objects, but the experience will be greatly lessened.

The students will record their observations of the object. They will be asked to record the size and shape of the objects; sketches would be appropriate at this point. However, it is important that the students be required to look beyond the obvious details. For example, students should be encouraged to think about what sorts of materials were used to make the object and what had to be done to those materials to shape them into the object. There are marks and scratches that make up wear patterns on the objects. These are the sorts of things that the students ought to be encouraged to notice. One of the advantages of going to a museum to look at objects is that the museum will also have some experts who can explain to the students how professional archeologists study an object. The students might benefit from some training in this area before going to the museum. Steps of old or frequently used buildings are a good place to start looking at wear patterns. If your students are old enough to use microscopes, smaller objects might be observed using dissecting microscopes.

There are a number of interesting food related things in the cultures that my students will be studying. My students will probably be looking at some manos and metates as well as some interesting Inca plates with handles. They will probably also study some chicha containers. If I can find some examples, I would like my students to also study some of the North American mortars and pestles. If food specific items are not available, farming or hunting tools are another alternative that could lead into food.

What things can tell us

This is the part of the unit where the students start to think about why the objects were made and how the objects are used. As an introduction to this part of the unit and before we go to the museum, the students will do a lab where they look at old, well worn shoes that have been left to the elements for a while to practice looking for clues about the owner. There is a worksheet in the resources section of this curriculum unit that I will use with lower level students to help guide their thoughts about the objects.

At the museum the students will go through procedures similar with the food related artifacts that they observed in the "things" section of this curriculum unit. If I have a large group, I may break the students into teams to study different food related objects; then the students will compare notes on the objects they studied. The amount of detail observed may be somewhat limited by the amount of time we have to spend in the museum as well as the students' ability to handle the objects. However, museum staff should be able to compensate for these limitations in that they will be able to confirm correct guesses and help to lead the inquiry in the correct direction.

Finally, as all of the objects studied at the museum are food related, the students should begin to wonder what sorts of foods were prepared using the objects they studied. Students should be encouraged to start to make some hypotheses about the sorts of foods being prepared with the equipment that they have studied.

What people eat and how we know

Naturally, all of the objects used for the two prior parts of this unit were used for food preparation and consumption. This part of the unit expands on what people ate. At this point, it will be necessary for the students to choose one culture for their project. Their project will be to research the foods used by one particular indigenous American culture. However, before the students go off into their own directions, they will need some basic knowledge of how this sort of information is obtained. This is the section of the unit where archeological techniques are explained.

How We Know

This section contains background information about the more common methods of obtaining information about any particular culture. It is intended as a guide for teachers who may not normally teach the social sciences and gives the general information that the students ought to know before they start their research into the foods eaten by various cultures. In my class I will probably spend one class period lecturing on this topic. As the unit is being presented at the beginning of the year, it will present a good opportunity for the students to practice taking notes. Alternatively, I may use the information in this section to make up a reading packet and practice some reading comprehension strategies with them.

Carbon pathways

Every living organism contains carbon which it has obtained from its food source. A plant obtains its carbon in the form of carbon dioxide. An herbivore obtains its carbon from the plants that it eats. A carnivore obtains its carbon from the animals that it eats. In essence all of the carbon in a living organism comes from carbon that was fixed by a phototrophic organism.

There are three different ways in which carbon can be fixed, and each pathway leaves a trace of its use in the carbon that gets passed up the food chain. The most basic pathway is the C3 pathway, which produces carbon chains based on three carbon units; this is what you may have studied as the Calvin cycle in biology. The C4 and CAM carbon pathways are adaptations of the C3 pathway that are used in plants in hot areas. While all three pathways result in carbon that has been fixed from the surrounding environment, each method of fixation yields a different type of carbon chain. Those carbon chains then can be used diagnostically to determine the primary source of carbon in a particular organism's diet.

Any reasonably advanced recent biology text book will have a detailed explanation of the three pathways. Additionally, there are many good websites that have explanations of the pathways at various levels. Elizabeth Little wrote an interesting paper that goes into this a bit more. ("The Late Woodland Diet on Nantucket Island and the Problem of Maize in Coastal New England" 351-352)

Ethnobotany

Ethnobotany is the study of society's use of plants. This type of anthropology has two parts. There is the study of current use of plants, but there is also the study of past use of plants. The study of the current uses of plants is conducted in a fairly straightforward manner. Ethnobotanists will generally interview members of the culture in which they have an interest to find out what type of plants they use, how they are use, why they are used, etc. The ethnobotanist may also go on plant collecting excursions with members of the particular culture they are studying. However, ethnobotanical study of past uses of plants is a bit more complicated.

Ethnobotanical study of past cultures generally requires advanced scientific analysis. There are several techniques that are frequently used. One of the more common strategies is pollen analysis. In this technique a stratum of soil or sometimes an artifact like a grave shroud is studied through a microscope or analyzed chemically for traces of pollen. Every type of pollen, like every type of plant, is unique. As a result, the pollen can indicate the presence of that particular plant near the object being studied. When this type of analysis is used in conjunction with food related items, the types of plants that may have been used as food stuffs can be determined.

Midden heaps are piles of refuse that have been left by a particular culture. For example, someday our landfills will be considered giant midden heaps. Within the midden piles archeologists will sometimes find bits of burned or discarded food items. For example, maize kernels and cobs are sometimes found. An ethnobotanist will be able to use a scanning electron microscope to study the structure of the plant material to identify these remains which especially when burned are generally thought to be kitchen refuse or discarded food scraps.

A sure method of identifying food that has been eaten by a particular culture is the analysis of coprolites. A coprolite is the fossilized remnant of feces, so it will contain the indigestible bits of food that have been eaten. Maize, when eaten off the cob, contains large amounts of indigestible cellulose, which may be found in the coprolites of cultures who ate corn on the cob. An ethnobotanist will be able to identify the food that was eaten which caused the undigested pieces to be excreted.

Ethnography

Ethnography is a term used by anthropologist to describe one method of collecting information about a culture. In this method, an anthropologist finds a living member or preferably lots of living members of the community they wish to study and asks questions. The ethnographer will generally spend time with various members of the community observing what they do, when they do it, how they do it, etc. This information is then published in a journal or a book.

There are a few caveats that I offer about this type of information. When using this sort of information it is important to note how the information was collected. Sometimes ethnographers are recording information obtained from interviews, which has a different sort of validity than information obtained from actual observation. Additionally, although most professional ethnographers today try to leave their own cultural experiences out of their observations, studies of this type are vulnerable to preconceived notions created by the cultural norms of the observer.

Ethnohistory

Ethnohistory is similar to ethnography in that it is the record of the activities of people in a particular culture. However, instead of the anthropologist going and talking to living members of a community, the anthropologist finds historical records of the culture. This means that a culture can be studied even if it is

extinct or has evolved into a new form. However, this type of information comes with its caveats as well. As in ethnography, the particular cultural bias of the observer must be noted. This cultural bias is frequently larger in historical documents than it is in modern documents because it is more commonly recognized as a problem today than it has been in the past. Furthermore, many ethnohistorical documents were created for a particular purpose such as propaganda or sales rather than for the purpose of greater scientific information.

What People Eat

At this point, the students should have some idea of how cultural information about food is collected. This discussion leads into the topic of information discrimination. Clearly, not all sources are equally reliable. The students will need to have some strategies for evaluating the information that they will encounter while doing the research in this section of the curriculum unit. If you have advanced students, they may not need more than a reminder to choose their sources carefully. Many of my students will need a crash course. So, I will probably take another day or two to go through the process of evaluating sources. In my classes, I generally encourage the students to try to figure out the point of view of the informant. I ask the students to try to figure out what the informant is "trying to sell them". My students will end up with some general tips on the reliability of various types of sources. Throughout the year, I work hard to engender skepticism in my students, so this project at the beginning of the year is a fine time to start this process. Finally, evaluating information is an important part of our science curriculum. The particular standards may be found in the appendix at the end of this unit.

This project will require the students to research several aspects of foods that their chosen people eat. The students will begin by choosing a culture to research. They will research the types of foods the people of their chosen culture eat and how these foods were prepared. The students will be required to come up with a "typical" week of meals for their indigenous population. After the students come up with their week of meals, they will record nutrient information about the foods they encountered. The USDA has a very complete listing of nutrient information in their online National Nutritional Database. For more information on what some indigenous populations actually ate, see the section below, "What People Ate".

At the end of this unit, in the resources section, there is a worksheet that the students will be able to use to organize their findings. More advanced students probably will not need this sheet, but it will be very useful for lower level students. Regardless of whether the students use the sheet there are certain pieces of information that they should gather about the food and the cultures which they will study. The students need to record the type of food, the serving size for the food, the nutrients found in the food, the source of their information that the food was being eaten in the culture that they are studying, and they also need to record the food preparation technique that is being used. In many cases the method of preparation changes the nutrient content of the food. Refer to the worksheet at the end of this curriculum unit for more detailed information.

What People Ate

This section is an overview of the eating habits of several indigenous cultures. It is intended for teachers who may not have much experience in this area. The topic is broken down by culture; however, there are several elements of cuisine that are shared by many or all cultures. If you wish to do your own research, I strongly recommend Sophie Coe's book *American's First Cuisines* and Betty Fussell's book *The Story of Corn*. The book *Chilies to Chocolate* is also a good book, but it contains some dated information and is more specific to certain types of foods rather than the whole diet. The information in this section on Central and South America comes largely from these books. The information on North American cuisine was a bit more scattered. One important resource was Jason Mancini, an ethnobotanist at the Mashantucket Pequot museum. Other sources included

several contemporary Euroamerican accounts and a few archeological reports.

The cultures included in this overview are the Maya, a sophisticated society of city-states in the tropical rainforest of Mesoamerica, the Aztec, a later empire in Mesoamerica, the Inca, a South American empire, and the peoples of southern coastal New England, a collection of territorial tribes. I have chosen these cultures for several reasons. First, there is quite a bit of information available about them. Second, while there is information also available about other cultures, these cultures tend to be representative of the heritage of many of my students. This unit could certainly be taught with different cultural groups if they are more representative of your student base or local area.

Almost all cultures in the Americas ate or still eat maize (aka corn). Maize appears to have originated in Mesoamerica a very long time ago. Maize then spread to all but the most climatically extreme areas of North and South America. As the technology to cultivate maize spread, the technology to cook maize nutritiously spread with it. To obtain the most protein from maize a process known in Mesoamerica known as nixtamalization must take place. In this process the maize kernels are soaked in a bath of lime (calcium carbonate) and water. Where lime is not available, lye (from wood ash soaked in water) is used in place of lime. After soaking, the maize is cooked. Then, the maize is ground and used for whatever preparation is desired. Most cultures have some form of a flattened disk or oval cake that is made from a dough of this ground maize. In Mesoamerica these cakes are tortillas and tamales. Further north they are the pika bread and posole of the Zuni. In the Northeastern US, they become noca, hoe cake or jonny cake (Fussell 193-198, 200-209).

Most Mesoamerican and South American cultures ate and still eat chilies. Chilies seem to have been a generic basis for sauces, soups, and stews and, in cultures where they were eaten, were eaten at almost every meal. In cultures where the chili pepper was consumed, not eating chilies was considered a fast (Coe, *America's First Cuisines* 39, 60-65).

Finally, almost all American cultures ate and eat beans, particularly black beans, kidney beans, and tepary beans. Beans, when eaten in combination with alkali processed corn, provide all the essential amino acids that the human body needs (Fussell 203). Furthermore, both corn and beans can be dried and stored for long periods of time. This allows them to be used as dietary staples throughout the year, which is what most American cultures did.

Maya Foods¹

The Maya diet is largely vegetarian. That is not to say that they don't also eat meat when it is available, but the bulk of their food appears to be and have been vegetarian. Their primary food source is maize. Maize was eaten at various stages of ripeness from the earliest green corn through full ripeness and smoked and dried for later use. Maize stalks were even sometimes eaten like sugar cane. Although maize was sometimes eaten on the cob, maize was mostly eaten in the form of an alkali processed dough that was prepared either by dissolving it in water to make a drink called atole, pinole, or posole, depending on the way the maize was prepared, or by making it into tamales or tortillas. Drinks and breads were seasoned with dozens of varieties of flavoring agents ranging from fruits and vegetables to meats, minerals, and honey.

Maize additions were varied and numerous. When meat was available it would be added to the dough variations mentioned above, but most often the additions were of plant materials. Chilies were the major addition to Mayan cooking. Chilies were added to almost everything and the chili and water combination formed the basis most sauces, stews and soups. Fruit additives to the maize might include papaya, avocado,

pineapple, sapote, and more. Beans were also an important part of the Maya diet. They frequently were made into fillings for the maize dishes mentioned above.

Additionally, they ate many different greens ranging from young beans to various leafy greens that were both wild and domesticated. The Maya used not only the bean seeds but also the young leaves and stems. The Maya also used numerous leafy plant materials for cooking. These leaves were used to wrap tamales and other foods while they were roasted, steamed or braised. The leaves frequently contributed flavorings to the enclosed foods. Sometimes the same leaves that were used to wrap foods also were used as fillings in different dishes. Greens, fruits and vegetables were also used as components of stewed creations that were eaten with tortillas.

Meat in the Mayan commoner's diet was rare, but it seems to have been more common in the upper classes of society. Wild game was available and eaten, as were fish, frogs, and iguanas. Fowl of all sorts including was also eaten. Mushrooms were classified by the Maya as meat and were eaten as well. Humans were eaten ceremonially. Meat was sometimes roasted, but it seems to have been more commonly eaten in combination with maize in one of the forms mentioned above. Meat was also salted, smoked, and dried to preserve it for later use.

There are several auxiliary foods that the Maya ate with some regularity that ought to be mentioned. Chocolate was used by the Maya, particularly the elite. The Maya seem to have drunk chocolate with seasonings, like vanilla and chili, similar to the Aztecs. Honey was also readily available in parts of the Mayan homeland, so it was used more frequently than in other indigenous American cultures (Coe and Coe, 2000, 51).

Aztec Foods

The Aztec, like most of the peoples of the Americas, used maize as their primary source of food. The Aztec used seven different varieties of maize. The Aztec, as the inheritors of much of the knowledge and experience of Mesoamerica, knew to use the process of nixtamalization, which increases the digestible protein in the corn. In addition to maize, the Aztec ate many other sources of protein. Beans were eaten both as seeds and greens. Wild game were consumed, and apparently were hunted in a sustainable manner. Various water dwelling animals including frogs, snakes, fish and insects contributed to the Aztec protein intake. Of special interest to youngsters who like to be disgusted are the wide variety of insects that the Aztec, and apparently their present day descendants, considered delicacies.

Many types of vegetation were included in the diet, ranging from roots like jicama, sweet potato and dahlia bulbs to greens like amaranth and algae, to seeds like chia (yes, the same stuff that grows on chia pets) and squash seeds. Several varieties of fruits were also eaten from tomatoes, cactus, avocado, and a few other plants. The Aztec were some of the few people in the new world to have access to multiple sources of sugary substances. They used both honey and agave syrup. Sophie Coe has wonderful descriptions of Aztec feasts in her book.

Aztec feasts and many other meals ended by drinking chocolate. Chocolate in the Aztec world is not the chocolate drink that most of us drink today. Sophie and Michael Coe wrote a wonderful book describing everything one might want to know about chocolate. I strongly recommend *The True History of Chocolate* for more information on chocolate.

Inca Foods

The Inca people ate maize, as did most other indigenous American cultures, but it was not as much a staple for them as it was for other cultures like the Maya and the Aztec. Because the Inca inhabited such a wide variety of environmental ecosystems, the Inca had several other choices for major sources of food.

In cold but reasonable well watered places the Inca grew numerous root crops. The most famous of them is the potato. To say the potato, though, is misleading. The Inca and their descendants today grow many, many varieties of potato with individual names for each. Potatoes were eaten cooked fresh or freeze dried as chuño and reconstituted in soups and stews. Several other root crops, oca, aña, ullucu, maka, and others, were eaten in similar ways. Peanuts were first domesticated in this region, too.

In addition to maize and numerous root crops, the Inca consumed the grain quinoa, legumes and fruits. Quinoa was eaten in many of the same ways that maize was consumed. The Inca diet was supplemented with several varieties of fruits including, strawberries, passion fruit, pineapples, paqay, and several others. Chiles, as in many other American cultures were eaten by the Inca, and as in many other American cultures, at almost every meal.

The Inca ate more meat than some other cultures; this was primarily because of the cuy. The cuy, also known as a guinea pig, was and is eaten even by the common people. The elites ate fish, deer, llama, vizcacha, and wild fowl as well. Unlike many other cultures in the Americas, the Inca did not eat dogs or humans, not even ritualistically.

Chocolate does not seem to have been a major feature of the Inca diet in the way it was for the Maya and the Aztec. Instead, the Inca drank chicha, a mildly alcoholic beverage brewed from maize which is frequently compared to beer. Other ingredients were included during fermentation and after to vary the flavor and alcohol content of the beverage. The beverage was fermented, not with brewer's yeast, but with the enzymes found in human saliva contributed by women and children chewing on some of the maize that was to be fermented. In some cases, frequently in ritualistic settings, specialized women did the chewing. In other cases ordinary women and children would be employed in this labor. The chicha seems to have been a fairly major contributor to the Inca caloric intake as several sources suggest that they drank it frequently.²

Coastal Communities of Southern New England

The peoples of southern New England tended to speak Algonquin languages and practiced similar cultural values, so in the same way that the Maya were a collection of peoples speaking similar languages with similar values yet were grouped together in this paper as one people, the peoples of southern New England will also be generalized.

The information for this section comes from a number of sources that were written in the early colonial period, so they reflect the lifestyle of the indigenous people at about that time. Furthermore, these authors have attempted to explain strange new wonders to Europeans who have never seen them, so some of the descriptions are a bit convoluted, somewhat inaccurate, and certainly biased. In some cases, I have had to make some educated guesses as to what was being described; however, I have attempted to make a note of this whenever it occurs. In addition to contemporary Euroamerican sources, I have used information from interviews with Jason Mancini and several archeological reports in this section.

The peoples of coastal New England at the time of European contact ate maize as a fairly significant part of their diet. However, maize was a relatively new addition to their diet. The earliest calibrated radiocarbon dates on maize in New England start about 1220 AD, but most date from the late 1200's and the dates further inland

from the coast are much later in the 1300's and 1400's (Little, "Kantantouwit's Legacy: Calibrated Dates on Maize in New England"). Unlike many of the peoples further south, the indigenous population of New England does not appear to have brewed carbonated or alcoholic beverages from their maize; although, they do seem to have retained some of the other traditions associated with maize. There are references in several of the European accounts which describe how maize was parched in hot ashes and then ground to make a powdered food source which was a staple on journeys. This powdered maize was eaten with water or snow in a manner similar to atole or posole. At home, this powdered maize was baked into what the Europeans describe as cakes, which is also called nocake (Williams, Wood, Gookin). As Betty Fussell points out, this is also called hoecake and johnnycake. It sounds somewhat like thick tortillas and probably served a similar nutritional purpose. The powdered maize was also eaten in a slightly looser configuration that the Europeans called samp or succotash; it is probably similar to what we eat as grits today except that in colonial times some pieces of maize may have been left whole and sometimes bits of meat, fish or vegetables would have been added. With the additions, it sounds similar to the Mesoamerican tradition of using atole as a base for stews and soups.

Because maize was a relatively new addition to the New England diet, The New England diet was heavily influenced by wild foods such as cattails, tree nuts, game and fish, and ground nuts and other tubers. In addition to using ground, dried maize for soup and stew based, the Algonquin peoples used dried, ground tree nuts. "Walnuts" are frequently mentioned in the European accounts, but Jason Mancini pointed out that most of these references are probably to hickory nuts which looked like walnuts to the Europeans. While one species of walnut, the black walnut, is indigenous to the Northeastern US, hickory nuts are and were far more common in the woods today and are their shells are far more common in the archeological record (J. Mancini, personal communication). Acorns, chestnuts, and hazel nuts would also have been used in a manner similar to the hickory nuts. Cattail roots, and other tubers like water lily roots and Jerusalem Artichokes, were probably also used in soups and stews, although they may have been sliced rather than ground after being dried. Finally, there were also numerous leafy greens that were eaten as a fairly large part of the diet.

New England has a wide array of berries, fruits, and vegetables that were eaten by the indigenous population. Blueberries and huckleberries were and still are common in the woods. Additionally, grapes, strawberries, cranberries, and the American gooseberry are still found wild and eaten in New England today. These berries and corn appear to be the only forms of sweetener that were consumed in southern New England. While maple syrup was certainly used further north, the sugar maple does not grow plentifully in the southern part of the region, and maple sugar is not mentioned as being eaten in southern New England by any of the colonial sources.

What do we eat

This section of the unit explores frightening topic of the modern American teenager's diet. In this section, the students will be asked to keep a detailed record of the foods that they eat for a week. Every day when the students come in to class, they will update their collection of food sheets. The students will use the same food sheets to record their food intake that they used to record the information from their study of the indigenous cultures. The USDA National Nutrient Database contains nutritional information on many modern packaged foods as well as information on whole foods, so the students should not have too much trouble finding the nutritional information on their own diets.

Good nutrition and good food

Up to this point we have made no judgments about what is good food and what is bad food. As good scientists, we have simply collected data. At this point we need to analyze the data. In order to do this analysis properly, the students will need a few tools. These tools will consist of the currently accepted nutritional basis of what constitutes a good diet. One of the key pieces of information that students will need is the amount of each nutrient that the human body needs. Most modern Health and Biology books contain a section on the human body and its nutritional needs. If you need more updated information, the FDA has a decent section on nutrition on its website. However, as I did for traditional foods, I am including the basics of nutritional science here.

The human body needs five basic types of nutrients: fat, carbohydrates, proteins, vitamins and minerals, and water. Fat, like most of the nutrients, comes in a number of varieties. It is digested in the upper regions of the intestinal tract and is used by the body as a source of energy. Carbohydrates can be sugars, starches, or fiber. As sugars or starches, carbohydrates can be a source of energy. However, in most indigenous American diets, carbohydrates contain large amounts of fiber. Fiber is not digested by the human body and it tends to slow down the absorption of the starchy or sugary carbohydrates that comes in the food packages with it. This means that in traditional Native American diets the starches and a few sugars that are eaten are absorbed slowly by the body. Proteins are the building blocks of life. They are made from amino acids. The human body uses numerous amino acids. Given the right ingredients, the human body can manufacture many of the amino acids we need, but there are a few that we can not make. The amino acids that we can not make, we must eat. Meat will contain all of the amino acids that we need. Vegetables will generally contain some of the amino acids that we need. This is what makes the corn and beans combination so important; together they contain all of the amino acids that the human body can not manufactures. Incidentally, avocados contain all of the amino acids that humans need. Humans need small amounts of vitamins and minerals to make certain body parts function. For example, muscles can not contract without calcium and sodium. The diets studied in this curriculum unit tend to have adequate supplies of vitamins and minerals. However, in some inland diets, like the Aztec diet, salt becomes an important commodity. Aside from salt, most of the vitamins and minerals are found in adequate amounts in the foods that are being eaten. This may not be true in the modern teenage diet, however, and it should be addressed with students. Water is the last nutrient. Most Mesoamerican and South American cultures did not drink water, at least not by itself. In these cases water was obtained from one of the corn or chocolate drinks or from the foods, like juicy fruits, that were eaten. Water is essential for human body functions and makes up almost 80% of the human body. Again, this is an area where the modern teenage diet is probably deficient because of the amount of salt and diuretics being consumed.

Where do we go from here

The students should now have a good idea of what the human body needs to survive and thrive. Using this information, they should look at their food log and their indigenous "food log" that they made up from their research and compare them based on their nutritional data. If you have typical American teenagers in your class, this may be a frightening experience.

The culminating activity for this unit is a project based on what the students learned. The students will come up with a plan to improve their own eating habits based on the research that they have done. This plan may take many forms. In my case, my students will probably plan a nutritionally balanced Thanksgiving meal based on traditional ingredients. Because I work in a small school, there is a good possibility that this meal will be cooked and eaten. Hopefully, we will be able to convince some parents to come in a help us learn to cook some of the traditional dishes. If this is not possible, in your school there are many other ways to present this information. Be Creative!

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