



Eating the Rainbow: A Student's Guide to Healthy Foods That Grow

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Introduction

As a teacher new to the third grade at John C. Daniels School, I have spent much time this year acclimating myself to the curriculum and expectations of this grade level. Besides the obvious challenges of changing grade levels, I am also feeling a big push to incorporate more science into the curriculum, as students will soon be tested in this area on the Connecticut Mastery Test. Science fascinates me, although my background knowledge of specific topics is often limited to teacher guides or library books. It would certainly be empowering, then, to feel well versed on specific science topics I am teaching my students. One major goal of this unit is to do just that. This confidence would help me to push my students to find out more and ask more questions - to really become "scientists."

Science also naturally stimulates curiosity. On any given day, you can see a majority of my third graders choosing texts from the non-fiction and science book bins during independent reading time. They are eager to find out more, share the interesting facts they have just learned, and always have several questions they want addressed immediately. Of course, as a teacher, nothing delights me more than to see my students genuinely interested in learning more about a subject. A second goal, then, is to tap into this curiosity in order to integrate two important topics in our science curriculum: concepts of good nutrition and plants.

My School and Students

John C. Daniels School is certainly unique. As one of only two dual language schools in New Haven, we have the privilege of educating our students in two languages and creating a welcoming, supportive environment that celebrates both English and Spanish language, culture and values. Our student population consists of about 50% English dominant students and 50% Spanish dominant students, with all students receiving instruction in both languages. Dual language teacher "teams" work together and share 40-50 students between two classrooms. The goal of this model is for students to begin in kindergarten and leave 8th grade both bilingual and biliterate.

Because of our daily schedule, this unit will actually be taught to two different groups of third graders, whom I share with my Spanish-speaking counterpart just next door. My students spend one week immersed in English class with me, then start the next week in Spanish class. During the week, we cover all topics including reading, writing, math, science, and social studies. This method has worked well for us because it allows our students to really immerse themselves in the language of the week and internalize concepts. This has been especially helpful for our English dominant students who don't hear Spanish anywhere except inside the classroom.

After sharing students like this for the last 4 years, my partner and I have quickly discovered the importance of joint planning, organization, and collaboration. More often than not, when planning for science, social studies, or math, we make sure to keep to a specific schedule, so as to ensure that all students are learning the same material, but also not learning it twice when moving to the next classroom. So, although this unit is written for the English component of our program, students will more than likely be learning some of this in Spanish class as well.

Rationale

The idea for this unit came about from several different sources. First of all, I have recently developed a deep interest in nutrition and how what I eat affects the way I feel. In an effort to improve my health, I have tried to focus the majority of my eating on foods that are close to their natural state. This includes of course, fruits and vegetables, but also items that have minimal processing and limited artificial ingredients and chemicals. I almost immediately noticed a difference in how I felt and looked. Besides losing a few pounds, I felt better about myself because I knew I was giving my body what it needed. I noted fewer colds and illnesses over the year and had more energy. But most striking was the way I felt when I did eat foods that were highly processed or full of sugar. I would almost immediately feel a heavy "ickiness" in my stomach and overall just felt gross. This was enough to push me to continue my new eating habits and develop the opinion that what you eat most certainly affects your well-being.

With my newfound enthusiasm for nutrition, I then became interested in finding ways to help my students understand this connection at an early age. I was also motivated by what I saw all too often in the lunchroom - students eating high salt, high sugar foods and drinks, pushing vegetables and fruits aside, and/or bringing to school bags full of several "junk food" items and calling it lunch. Now, I certainly can't blame my students for eating what they do. For the most part, their diets are controlled by the adults around them. And certainly, if given a choice between a plate of steaming broccoli and a bag of Cheetos, I can predict what will be left behind. Our children, like most adults, have been conditioned to prefer the taste of processed foods with lots of salt and sugar to make them tasty. Now while I do realize that I will not be able to change completely the diets of my students, I do feel I have the opportunity to inform my students of the power and value of various foods, introduce them to some healthy foods they may not have tasted before, and perhaps change some of their habits either now, or in the future.

Objectives

More specifically, I hope for this unit to:

- 1 Introduce students to the concept of nutrition and how food is used in the body.
- 2 Connect food intake and digestion to the idea of "energy" and relate it to plants' use of "energy" as well.
- 3 Encourage students to examine their own diets and analyze them in terms of good nutrition.
- 4 Have students examine various foods for nutritional value and research the nutritional value of specific fruits and vegetables.
- 5 Introduce students to the concept of "eating the rainbow" in order to take in a variety of necessary vitamins and minerals.
- 6 Build content specific vocabulary for all students, but especially second language learners.
- 7 Encourage students to explore and taste new, nutritious foods.
- 8 Have students plan and implement an indoor/ container garden, taking into account the wide range of vitamins we need, and also the needs of plants.

Strategies

I will focus on several different strategies while implementing this unit with my students. First and foremost, because of the unique nature of the dual language program in my school, I must always keep in mind that I am teaching many second language learners. All teachers in my school have been trained in the SIOP model (Sheltered Instruction Observation Protocol). This model features many strategies intended to help second language learners achieve maximum understanding. However, these strategies are good practice for helping all students increase their understanding as well. Some of these techniques can include:

- 1 Using pictures to illustrate vocabulary, concepts, procedures, and directions.
- 2 Having students use physical responses and gestures to illustrate their understanding.
- 3 Asking a variety of questions that allow students of various levels of English language development to participate and show their understanding.

- 4 Providing students with both content and language vocabulary in order to respond and participate in class discussions.
- 5 Giving specific students different options for demonstrating their understanding (such as art projects rather than written essays and group work).

Because this is a science unit, I will also be encouraging my students to ask lots of questions and seek their own answers as the unit progresses. I hope to promote inquiry by having students examine pictures, books, real fruits and vegetables, and websites. Students will work with partners or small groups in order to discuss their findings and understandings along the way. I will also have students keep a science journal in order to document these things as well, and also give them a chance to reflect on what they are learning. At unit's end, students will apply what they have learned about nutrition and plants while creating a real indoor/container garden.

Background Information and Sequence of Unit

While the main focus of this unit will be nutrition, students will also be incorporating information they have learned previously in a unit about plants. This information will help them to not only plant their gardens, but also connect to an underlying theme of *energy*. Students will recall what they have learned about how plants use energy (from the sun) to make food and grow. This knowledge will then be tied into the idea that food is a necessary item that provides us with energy, vitamins, and nutrients needed for healthy growth in our own bodies as well. Unlike plants, humans cannot make their own food. Therefore, we rely on the energy that is stored in plants and transferred to us when we eat them.

I think this will be something easy for my students to connect to. For example, many of my students love to play sports or outside games. They can relate to feeling energized and ready to play for hours, as opposed to feeling tired and run down. The same is true for plants: they need certain things to help them make food, grow and thrive, just as we do. That energy in plants (along with specific vitamins and minerals) can be transferred to us by simply eating those plants. Energy is actually being transferred for growth all the time - from sun to plants, from plants to people and animals, and back into to soil when things die.

Plants

Students will need a basic understanding of how plants develop from seeds, as well as how they grow and make food and what is needed for proper plant care. Because this unit will focus mainly on nutrition, it is important that students have a general understanding of the following concepts beforehand:

- 1 Plants begin life as seeds and need specific elements to begin growth (namely water and soil)

- 2 Soil provides nutrients for the developing seed, and water softens the seed coat, allowing for germination to begin.
- 3 Once the seed sprouts (that is, grows above the soil), the plant will need sunlight in order to begin making food.
- 4 Plants make their own food (sugar) through a process called photosynthesis.
- 5 During photosynthesis, a plant uses sunlight, carbon dioxide, and chlorophyll (found in the plant) to make food. This food gives the plant energy to grow.
- 6 Plants also produce oxygen during photosynthesis, which is released into the air.
- 7 Energy is transferred from plants to humans when we consume the plants. The nutrients in the plants give us energy and help us to remain healthy and grow as well.

Nutrition

As students internalize this idea of necessary energy, we can then take an in depth look at exactly where they are getting their energy. This will really begin our study of nutrition. My experience teaching a short nutrition unit this year quickly taught me that my students really have no understanding of which foods are healthy for them and which ones are not. Thus, a good place to start is with the book *Good Enough to Eat* by Lizzy Rockwell. What I like about this book is that it gives students an easy to understand guide to how different foods can do different things for our bodies. It describes the various nutrients that everyone needs, such as carbohydrates, fats, protein and various vitamins, as well as what they do. For example, Rockwell describes how we need energy for many daily activities, and carbohydrates can provide this for our bodies, keeping them going for a long period of time (1). She also mentions how protein gives us energy but is also used for building and repairing muscles and bones (1). Fat is also an energy source, but needs to be eaten in moderation (1). Students will also begin to understand that sugary foods give us energy as well, but the quality of that energy is very different from that which we get from healthy foods because it is used so quickly (1).

Students will use their science notebooks throughout this unit to record their newfound information. For example, after reading this book, students can record the following vocabulary words and write a definition so they can refer back to it at any time: *carbohydrates, protein, fats, sugar, and energy* .

The next step will be to help students understand just which foods are those that will provide them with the energy they need and make them feel better. The book *Eat Healthy, Feel Great* by William and Martha Sears and Christie Watts Kelly, will help to do just that. The authors classify foods into three different categories. The first group, called green-light foods, contains those foods that give you plenty of energy to play and also help you grow and be strong. The green color is indicative of "go" so children know these foods are good to eat and they can eat how ever much they want of them (2). The second group is called yellow-light foods. It contains foods that are ok to eat some of the time and will give you some energy, although not as much as green-light foods. Students can link the yellow light to "slowing down" and thinking about only eating these foods once in

while (2). The last group, the red-light foods, contains those foods that really do nothing for the body nutritionally or energy wise. Students should be encouraged to "stop" and stay away from these foods if they can, as they can make you feel tired and overly full (2).

The three light system will be really easy for my students to understand, and will also provide them with a quick way to know which foods are better for them. To give them practice with this, I intend to give them pictures of a variety of types of foods. They will then work in small groups to classify the foods into the three groups. Although I don't expect them to classify them all correctly the first time, the activity will lend itself to a discussion about their selections as well as why certain foods are indeed "green-light," "yellow-light," or "red-light." Because the focus of this unit is on healthy foods that grow, I will also let students know that items that come from nature, (and minimally processed) are nearly always "green-light" foods and thus very healthy. They can then make three lists in their notebooks, one for green light foods, one for yellow light foods, and one for red light foods. This will serve as a quick reference for my students when they are at home and not sure which foods are the best to eat.

The next thing I want students to do is to take their new knowledge and examine their own diets for a period of time. They will do this through a food diary, which they will keep for several days in their journals and record everything they eat or drink. When food diaries are complete, students will analyze their own diets in terms of the three light system. Foods will be color coded so students can tell at a glance if they are eating too many yellow and red light foods, and not enough green light foods.

As students begin to understand which foods are healthy for them, I will have them dig deeper and research what it is that makes these foods so healthy. More specifically, students will work in groups and be given several pictures of fruits and vegetables of various colors. They will then use the internet and/or library books to search for these fruits and vegetables and discover what vitamins and/or minerals they contain, as well as how they help our bodies. Students will complete a research worksheet and report their finding back to the class. We will then compile our data into a class chart, sorting items by color and looking for similarities in nutrition among color groups. This chart will then make a quick reference for students for other activities in this unit.

This is where the title "Eating the Rainbow" will come into play. The specific nutritional value of fruits and vegetables can be determined simply by looking at their color. According to David Heber, in his book *What Color is Your Diet* , "each colored fruit or vegetable provides a unique benefit to the diet, so you don't want to eat only fruits and vegetables of a single color, [but rather, many different colors]" (3). Students will learn the basics of this by finding out what vitamins are present in specific color fruits and vegetables

Specifically, students will research the following fruits and vegetables, focusing on the effects of these vitamins on the body. Students will not be expected to find all nutrition information on these foods, but some of the major vitamins and minerals and benefits, such as those listed below. I have grouped the foods according to their color and have added information after the groupings about the overall health benefits of eating foods from each specific color group. This information will be for teacher reference and used to give students additional information as the class chart is made. Students will also be expected to complete color group charts in their science notebooks and thus always have this information available to them for quick reference.

The Red Group

- 1 **Strawberries** - contain vitamin C, which may aid in helping the body recover from illnesses and boost the immune system (4).
- 2 **Raspberries** - contain vitamin C (see above), help to fight cancer (4)
- 3 **Tomatoes** - contain vitamin C (see above) and lycopene, which may reduce risk of cancer (4).
- 4 **Red Peppers** - a great source of vitamin C (see above) and vitamin A (beta-carotene), which may help in the health of eyes (4).

Just looking at the list of fruits and vegetables above, one will almost immediately notice some things they have in common. First of all, all of these fruits and vegetables contain high amounts of vitamin C. Vitamin C is necessary for a healthy immune system and may help you recover more quickly from colds and viruses. It also aids in the repair of broken bones (5).

These foods are also very high in antioxidants. Antioxidants in plants help protect them from the damaging effects of the sun, and also serve to help protect our bodies from damage and disease as well (4). In humans, antioxidants help to fight heart disease and cancer. According to James A. Joseph et al, "as our bodies utilize oxygen, they also turn some of it into free radicals - oxygen molecules that are unstable because they have an unbalanced number of electrons" (4). These are damaging to our bodies because free radicals try to stable themselves by attacking stable molecules. Antioxidants can help by attacking free radicals before damage is done. However, they are only effective if there are enough antioxidants present to outnumber the free radicals (4). Thus, it is important to include antioxidant rich foods in one's diet in order to help ward off diseases (such as cancer) that may attack the body.

Although third graders will not need such an in-depth explanation of these antioxidants, what they can take away is that fruits and vegetables in the red group are disease fighters and can help you to stay healthy.

The Orange Group

- 1 **Carrots** - contain vitamin A (beta carotene) which is crucial for eyesight (4)
- 2 **Sweet Potatoes** - contain vitamin A (see above) and vitamin E (4).
- 3 **Cantaloupe** - contains vitamin A (beta carotene) (4).
- 4 **Pumpkins** - contains vitamin A (beat carotene) and fiber (4).
- 5 **Winter squash** - contains vitamin A (beta carotene) (4).

The orange group is most obviously a great source of vitamin A. The vitamin A in these fruits and vegetables come from the orange pigment, beta carotene. Vitamin A has some amazing health benefits. First and foremost, this vitamin is responsible for keeping the eyes healthy. "It also plays a critical role in maintaining

the immune system, the skin, and the so-called epithelial cells that line every organ. . .[where] 85% of cancers start" (4).

Some new studies are also suggesting that vitamin A may play a role in memory and learning. Researchers believe that if you are deficient in this vitamin, you may have more difficulty learning and remembering things, and boosting your intake may help to improve this (4). Beta carotene can also repair DNA and "aid in a type of cellular communication that can help stifle malignancies" (4) better than any other carotenoids, which are a type of plant pigment (4).

It would be important for students to understand that foods in the orange group can certainly help to improve eyesight and even improve your ability to learn and remember.

The Green Group

- 1 **Spinach** - contains the phytochemical lutein (for eye health) and folate, as well as many other vitamins (4).
- 2 **Asparagus** - also contains lutein and folate, as well as a variety of other vitamins (4).
- 3 **Broccoli** - contains lutein and folate, as well as vitamins A, C, K, and E (4).
- 4 **Kiwi fruit** - again, contains lutein and folate, as well as vitamins A, C, B6, and potassium (4).

As emphasized by James Joseph in *The Color Code*, "green is the color of life" (4). All of this life, however, has chlorophyll to thank for it. Chlorophyll allows plants to use energy from the sun to make food. Although we don't eat green plants for their chlorophyll, these fruits and vegetables do contain large amounts of phytochemicals, which really promote healthy life. One of these phytochemicals, lutein, also plays a major role in eye health, and can help prevent diseases like macular degeneration, cataracts, and retinal diseases (4).

Folate, which is present in all of the above listed green plants, has already gained recognition as being critical for the healthy development of fetuses in pregnant women. However, folate is also now recognized as helping to prevent heart disease "because it helps your body dispose of a troublesome amino acid called homocysteine, which seems to make blood vessels susceptible to damage" (4).

Overall, it would be beneficial for students to understand that green plants can help to improve eyesight and also keep your heart healthy. They should also recognize that the darker shade of green a plant is, the more vitamins and nutrients it contains, and thus, the better for you it is.

The Blue-Purple Group

- 1 **Blueberries** - contains powerful antioxidants (called anthocyanin pigments) which contribute to protection of the brain as one ages, as well as some protection from Alzheimer's Disease, and also protect the body from the stress of free radicals (4).
- 2 **Blackberries** - also contain high levels of antioxidants (anthocyanin pigments) (4).

3 **Concord Grapes** - again, contain those wonderful antioxidants (see above) (4).

4 **Eggplant** - also contains anthocyanin pigments (4).

The most marvelous quality of the plants in the blue-purple group has to be the presence of powerful antioxidants called anthocyanin pigments, which give many of these plants their vibrant color. These antioxidants have been noted to produce amazing anti-aging effects on the brain when laboratory studies were conducted. These antioxidants actually protect the brain from deterioration by free radicals. This may in fact help the elderly stay active longer and keep memory and functioning in tact as we age (4).

The antioxidants have also been studied for their effect on Alzheimer's disease. Recent evidence suggests that they may indeed be helpful in slowing down this disease. The antioxidants in grapes and eggplant may also aid in lowering bad cholesterol and keeping arteries more elastic. Eggplant may even help to prevent wrinkles as we age (4).

Overall, students should be taught that plants in the blue-purple group have amazing antioxidants that help keep us young. Students should think of these plants as helping to keep the brain healthy and aiding in our thinking and memory. These plants can also help to keep our bodies young, and overall improve our health and the way we feel.

Planting a Rainbow

Now that students have researched the rainbow of plants available to eat, and also learned about their amazing nutritional properties, they will get a chance to actually begin to make changes in their diet by growing and eating their own produce. Students will apply their knowledge about plants and nutrition to plan and carry out a class indoor garden, which will provide us the opportunity to sample these healthy foods.

Because some of the fruits and vegetables studied by the students are more conducive to indoor/container planting than others, students will work in groups to choose one plant from a specific color group, with the goal being that as a class, all four color groups will be represented. Each group of five students will be responsible for prepping their part of the indoor garden, researching the care needed for their specific plant, planting the seeds/seedlings, caring for the plants, and harvesting the plants when grown.

The following plants (taken from those listed in the before mentioned color groups) should be conducive to container/indoor planting.

1 Red Group - Tomatoes, Red Peppers

2 Orange Group - Carrots, Squash

3 Green Group - Spinach

4 Blue/Purple Group - Eggplant

Getting Started with Indoor Gardening

Being new to indoor gardening, I have found there is quite a lot to learn and think about! There are several important things to keep in mind when starting an indoor garden. However, my first concern is that I choose plants that my students will be most successful in caring for and achieving the ultimate goal: a crop of plants to eat. So, although it would be nice to give my students a wide variety of plants to choose from, it will be necessary to limit their choices to those listed above in order to give the garden the best chance for success. The fruits and vegetables not covered in the planting session can most certainly be purchased at the store for sampling. But it is still important, in my opinion, to give my students the chance to grow some plants on their own. This will not only help them feel successful, but also open them up to a new hobby (one that they may be able to continue in their urban home settings where space is often limited) and allow them to realize that healthy, delicious food can come from nature.

Starting the Seeds

In an ideal situation, the easiest way to start the garden with my students would be to purchase seedlings at a local nursery and then plant them immediately. However, because my students will not be in school during the ideal months for gardening, we will have to adjust. My solution, then, is to actually have students start those seeds themselves by using an indoor greenhouse system. This will allow us to start planting in late winter or early spring and hopefully harvest some fruits and vegetables before school ends in June.

When starting seeds, it is important to know generally how long it will take for the seeds to germinate and be ready to transplant to an outside container. Again, transplanting outside may be a bit tricky for my students, as the weather may not be cooperative. However, there are a few tricks that can help with this issue, or else we may just have to keep the plants inside. Regardless, we should be aware of the germination time so we can generally do any necessary transplanting around the same time.

The following are general germination times for the plants we may be using:

- 1 Tomatoes - 50-70 days
- 2 Peppers - 50-70 days
- 3 Carrots - 50-75 days
- 4 Squash - 30 days
- 5 Spinach - 30-45 days
- 6 Eggplant - 50-70 days (6)

A great reference book for such gardening needs has been *The Bountiful Container*, by Rose Marie Nichols McGee and Maggie Stuckey. This book is great for teachers to use and easy to understand for the beginner gardener, like myself. Although it is not at a third grade reading level, I do feel I can also use it with my students as a reference for some of their plant care.

According to McGee and Stuckey, a good idea when starting seeds is to buy specific seed starting potting mix. Small containers (which are made specifically for starting seeds) will also be needed. A drip tray will be necessary to catch excess water, and labels will keep things organized. When planting the seeds, be sure the potting mix is damp but not dripping. Fill each pot with soil, then add the seeds and cover with a little bit more soil (6). The seed trays can then be placed in the indoor greenhouse.

Indoor Greenhouses

An indoor greenhouse will be a good choice for the needs of the class, as the weather will more than likely not be conducive to outside planting right when we need it. Greenhouses come in all shapes, sizes, and prices, but I plan to use a relatively inexpensive, simple version. You can also make your own greenhouse if you are so inclined, as they are not that difficult to construct.

"A greenhouse is a structure with a glass or plastic roof and frequently glass or plastic walls; it heats up because incoming solar [or in our case, fluorescent light] radiation . . . warms plants, soil, and other things inside the building" (7). For the classroom, we will use a greenhouse with plastic walls and roof and an artificial light source hanging from the top. This will allow the seedling to germinate and also support the plants in their younger stages before they can go outside. The plants will need to be kept moist with a mister, or water poured into the drip tray that will be absorbed into the soil from the bottom of the pots (6).

Once seeds have germinated, it may be necessary to thin out some of the seedling to allow some of them to have more room. The best way to do this to avoid damage to the plants is to snip off the extra seedlings at the soil line. At some point, the seedling may also need to be transferred to larger pots if it is not time for them to go outside. When the seedlings have three sets of leaves, they are probably ready to be transplanted (6).

If and when seedlings do make it outside, covering them with plastic (such as a milk jug with the bottom cut out) at night will help protect them from the chilly air. Being new to this process, I suspect I will be learning as I go with the students and will only be able to judge if the plants can go outside when that time comes. If they will be transplanted outside, they can be placed in larger containers and maintained from there.

Harvesting

If everything goes according to plan, the ultimate goal will be to have some vegetables to harvest. We can end our unit of study with a fruit and vegetable tasting party that will allow my students to try some new healthy foods. Our crops will be supplemented with some other fruits and vegetables from the store, but this will still serve my ultimate goal. I want my students to have a better understanding of how healthy foods can improve the way they feel and also open their eyes to some foods they may have shied away from in the past. They can bring this information back to their families and maybe even influence what is bought at the store in the future.

Sample Lessons

Lesson 1 - Stoplight Food Sort

Objectives: Students will:

- 1 Use information about healthy foods from the book *Eat Healthy, Feel Great* by William and Martha Sears and Christie Watts Kelly to complete their food sort task.
- 2 Sort various foods into three categories - green light, yellow light, and red light foods.
- 3 Discuss their reasoning for sorting foods the way they did.
- 4 Create a reference list in their notebooks of foods that fit in each category.

Materials:

- 1 Book - *Eat Healthy, Feel Great* by William and Martha Sears and Christie Watts Kelly.
- 2 Science notebooks
- 3 Picture cards of various foods, both healthy and unhealthy (laminated)
- 4 Chart paper/markers

Procedure:

1. The lesson will begin with the teacher asking the students to share what they know about foods that are healthy and not healthy. That is, students can be asked to tell what foods they think are healthy and not healthy, as well as how they can tell when something is healthy or not. This information can be recorded on chart paper for the whole class.
2. Next, the teacher will introduce the book *Eat Healthy, Feel Great* by William and Martha Sears and Christie Watts Kelly. This book gives information about different types of foods and how their ingredients can affect our bodies. It also introduces the stoplight system for classifying foods, which makes distinguishing healthy foods easy for children.
3. The teacher will then put the stoplight system on chart paper, and write the following definitions for all students to refer to: green light foods - means "go;" you can eat as much of these foods as you want and as often as you want; yellow light foods - means "slow down;" these foods should be eaten in moderation and only sometimes; red light foods - means "stop;" these

foods should be avoided when possible, as they provide almost no nutrition for the body and may even hurt the body.

4. Once students are familiar with this sorting system, students will be broken into groups of 3-4 and given a pile of food picture cards. They will be asked to sort the cards into three groups, corresponding with the stoplight system (green, yellow, and red).

5. Once foods are sorted, students will share their findings with the class and defend their choices for food placements. A class sort can also be done based on what students decided.

6. The teacher will then provide students with more information and clarify any misconceptions or incorrect sorting. The teacher should also make sure students understand that green light foods generally come directly from nature and have little or nothing done to change them, while red light foods have been changed a lot, and often times have added fat, sugar, and preservatives.

7. The lesson will close by having students return to their seats and record what they have learned that day in their science notebooks. They should also make a three column chart - one for each color of the stoplight - and list foods that fit in each group. This will serve as a quick reference for them in school and at home.

Lesson 2 - A Look at My Own Diet

Objectives: Students will:

- 1 Keep a daily log of all the foods they eat for a week.
- 2 Use the stoplight system (which students became familiar with in Lesson 1) to categorize the foods they are eating as green, yellow, or red light.
- 3 Reflect on what they have discovered about their diets in their science journals.
- 4 Plan a healthy menu for two days, including more green light foods into their diet.

Materials:

- 1 Food diary recording sheet
- 2 Science journal
- 3 Stoplight food chart (from Lesson 1)
- 4 Markers (green, yellow, and red)

Procedure:

1. The teacher will begin the lesson by telling students they will be taking a closer look at their diets to see what kinds of foods they are eating. Students will be shown a blank food diary recording sheet and told they are to record everything they eat (including all snacks and drinks) over the next week. The teacher can also show them a completed food diary as an example.
2. Over the next week, students will complete the food diary with the teacher's help if necessary.
3. After the food diary is complete, students will refer back to the stoplight chart or the charts they made in their journals to classify the foods they have eaten that week. They will do this by drawing a colored dot, green, yellow, or red, next to each food item.
4. Students will then examine their colors and write a reflection in their journals, telling what they observed (that is, what kinds of foods are they eating perhaps too much of, or the right amount of).
5. After reflecting on their diets, students will plan two days worth of meals and snacks (three meals and two snacks each day), making sure to include mostly green light foods, with a few yellow light foods and no red light foods.
6. Students can then share their menus with the class to give some ideas about what students might eat to improve their diets.

Lesson 3 - Colorful Food Research

Objectives: Students will:

- 1 Choose several fruits or vegetables sharing the same color (red, orange, green, or blue/purple) to find out more nutritional information about.
- 2 Work in partners and use the internet or library books to research the nutritional aspects of the fruits and vegetables and others in the same color group
- 3 Report their findings to the class and add their information to a class chart

Materials:

- 1 List and pictures of fruits and vegetables, sorted by color group
- 2 Access to the library and the internet for research purposes
- 3 Science journals

4 Class recording chart

Procedure:

1. The lesson will begin with the teacher telling students that when trying to eat healthy, sometimes you will hear the expression "eat the rainbow." The teacher will then inform students that this is referring to the color of foods that grow and that you can tell what vitamins and special nutritional aspects certain fruits and vegetables contain by their color.
2. Students will then be shown pictures of several fruits and vegetables, which will be categorized by color: red, orange, green, or blue/purple.
3. Students will be instructed to work with a partner and pick two fruits and/or vegetables (both from the same group) to find out more about.
4. After students have selected their fruits/vegetables, they will be given the following focus questions that they must find the answer to via research in the library and/or on the internet. The library media teacher will be informed of this assignment beforehand and will help guide the students in their research. The questions are as follows: What color group does your fruits and/or vegetables fit in? What are some of the major vitamins found in each of your fruits and/or vegetables? How do these vitamins help your body? Do these fruits and/or vegetables have any other special qualities that help the body?
5. After students have completed their research, they will return to the classroom to share their data. Each team will report what they have discovered and the information will be recorded on a four square chart (one square for each color group).
6. As a class, students will try and discover any similarities between fruits and vegetables in the same color group (that is, do they have any of the same vitamins or special benefits for the body). These similarities can be highlighted.
7. Students will then take this information and record it in their journals, making a list for each color group of the overall important nutritional information that was discovered as a class.
8. The teacher should reiterate that because each color group has specific nutritional benefits, students should try and eat fruits and vegetables of various colors to get the maximum benefits.

Bibliography for Children

Kalbacken, Joan. *Vitamins and Minerals*. Children's Press. New York: 1998. This is an informational book for students about different vitamins and minerals our bodies need and how they help our bodies.

Petrie, Kristin. *Nutrition Anyone?* Abdo Publishing Company. Edina: 2004. This is an informational book for children to introduce them to the idea of good nutrition.

Rockwell, Lizzie. *Good Enough to Eat: A Kid's Guide to Food and Nutrition*. Harper Collins Publishers. USA: 1999. Rockwell presents nutritional information in an easy to understand way for children and also helps to show how healthy foods give us long lasting energy, while energy from sugary foods doesn't last.

Sears, William M.D., Sears, Martha, R.N., and Watts Kelly, Christie. *Eat Healthy, Feel Great*. Little Brown and Company. Boston: 2002. This book makes it easy for children to understand that not all foods are created equal. Sears classifies foods into three categories using the stoplight analogy, which helps children to identify what they should and should not eat.

Seixas, Judith. *Junk Food - What it is, What it Does*. Greenwillow Books. New York: 1984. This is another informational book about the components of junk food. This book will help children to understand that excess fat, sugar, and preservatives can be detrimental to the body.

Seixas, Judith. *Vitamins - What They Are, What They Do*. Greenwillow Books. New York: 1986. This book gives information about specific vitamins and how they are needed for healthy functioning on the body.

Silverstein, Alvin., Silverstein, Virginia., and Silverstein Nunn, Laura. *Eat Your Vegetables! Drink Your Milk!* Franklin Watts. New York: 2000. This book is also a great resource for children to introduce them to the idea of good nutrition, and how specific foods can benefit ones body.

Bibliography for Teachers

Beckett, Kenneth A., Carr David, and Stevens, David. *The Contained Garden*. The Viking Press. New York: 1982. This is a guide to planting various flowers, fruits, and vegetables in containers, including container selection, care, and maintenance.

Heber, David. *What Color is Your Diet?* Regan Books. New York: 2001. This book is a guide to healthy eating by using a color coded system to identify fruits and vegetables that have specific benefits for the body. It also includes recipes for dishes packed with specific nutrients.

Joseph, James A., Nadeau, Daniel A., and Underwood, Anne. *The Color Code*. The Philip Leaf Group. New York: 2002. This is also an informational book that identifies different fruits and vegetables and their amazing nutritional properties. It also shows how eating foods of various colors will help you maintain maximum nutrition by giving the body a variety of nutrients.

Minnich, Jerry. *Gardening for Maximum Nutrition*. Rodale Press. Emmaus: 1983. This is a guide to gardening that is intended for those who want to grow nutritious fruits and vegetables and turn their garden into part of their kitchen.

Nichols McGee, Rose Marie, and Stuckey, Maggie. *The Bountiful Container*. Workman Publishing. New York: 2002. This is the best

resource I have found for the beginner who wants to start seedlings and/or learn about container gardening. It is easy to understand and gives you tips that make it seem easy to be successful.

Toogood, Alan. *The Complete Book of Container Gardening*. Trafalgar Square Publishing. North Pomfret: 1991. This is another book that gives information about how to get started container gardening, what plants work well in containers, and how to care for plants in containers.

Web Resources

Dole 5 A Day. Dole Food Company. Retrieved June 30, 2007 from the World Wide Web: www.dole5aday.com. This is a good website for children and teachers and gives information about eating more fruits and vegetables each day. It also has recipes, games, and activities for teachers to use in the classroom.

Fresh For Kids. Sydney Markets Limited. Retrieved June 30, 2007 from the World Wide Web: www.freshforkids.com. This website is great for students in that it has an extensive list of fruits and vegetables with nutrition information for each one.

Greenhouse. (2007). Wikipedia. Retrieved June 30, 2007 from the World Wide Web: <http://www.wikipedia.org/wiki/Greenhouse>. This website gives general information about what a greenhouse is and how it works. It also gives some history about how greenhouses first came into use.

Nutrition Explorations for Kids. National Daily Council. Retrieved June 30, 2007 from the World Wide Web: www.nutritionexplorations.com/kids/main.asp. This site will appeal to children as there are games as well as information about healthy eating and the food groups.

Notes

1. Rockwell, Lizzie. *Good Enough to Eat: A Kid's Guide to Food and Nutrition*. Harper Collins Publishers. USA: 1999.
2. Sears, William M.D., Sears, Martha, R.N., and Watts Kelly, Christie. *Eat Healthy, Feel Great*. Little Brown and Company. Boston: 2002.
3. Heber, David. *What Color is Your Diet?* Regan Books. New York: 2001.
4. Joseph, James A., Nadeau, Daniel A., and Underwood, Anne. *The Color Code*. The Philip Leaf Group. New York: 2002.
5. Kalbacken, Joan. *Vitamins and Minerals*. Children's Press. New York: 1998.
6. Nichols McGee, Rose Marie, and Stuckey, Maggie. *The Bountiful Container*. Workman Publishing. New York: 2002.
7. Greenhouse. (2007). Wikipedia. Retrieved June 30, 2007 from the World Wide Web: <http://www.wikipedia.org/wiki/Greenhouse>.

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