

## For Every Season

*Lisa Viktorin*

Johnston Middle School

All summer long you can pass by and see Mrs. Dornak and Clement, with her bonnet and his straw hat on to protect them from the hot sun, carefully tending their plants as gently and tenderly as a mother tends her babes. This beauty is free to all who care to look.

- Ann Leach, *Postscripts from Prairie Switch*

## TALES OF DIFFERENT GARDENS

In Cuernavaca, Mexico, there are two gardens that fascinate me even though I have never seen them and know only of their stories by word of mouth. A diplomat commissioned both. One garden was designed for his home and his Spanish wife and the second for his “bonita” Indian mistress. Both, I believe, were inspired by love and both are considered beautiful. However, I imagine they are very different.

In my opinion, there are two types of gardens. One type is very public and created to please the masses that seek refuge. Then there is the garden that has a soul and each plant tells a story. Following this line of thought, I reason that there are two types of gardeners. Both are driven by aesthetics yet have different perspectives. One gardener attempts to create a perceived image of how a garden should appear. This gardener chooses traditional plants, shrubs, and flowers. The other gardener, whose purpose is to create a haven, is driven by emotion. Both gardens are beautiful; yet they are different.

I am an emotional gardener. I decided to create a garden outside of my classroom. My garden was lovely for two years. However, its beauty began to fade after a particularly rainy summer season along with an invasive grass that took over a majority of the beds. Now, as I am redesigning the garden, I have taken time to reflect on the two women that have shaped my view of gardening.

My grandmother, Frances Dornak, lived for 105 years. The two things I remember most vividly about her are her tenacity and her garden. Her garden included rows of daisies and cosmos. She also had a raised bed in front of a picture window that produced a sea of blue plumbago every summer. Her garden flourished in the spring, summer, and fall. During the winter, while the physical garden was barren, she mentally planned for the following spring. Her stack of seed catalogs seemed enormous, and she spent many evenings preparing her order. Every year, her flowers were enjoyed and envied, eventually making the column of her local newspaper.

Mattie Carroll was my parents’ next-door neighbor. Mrs. Carroll was a gentle woman who wore denim pants, a chambray shirt, and a floppy hat while she gardened.

Each season her garden brought promises of particular plants. For example, she had irises and gingers blooming among lantana every summer, a huge pyracantha bush full of red berries every Thanksgiving, and jonquils appearing under her mimosa tree every spring. However, this spring the jonquils' blooms not only represented a new season but also the day of Mrs. Carroll's funeral.

I, too, now believe that for every season there are distinct plants and colors. Therefore, the garden project at Johnston Middle School has distinct seasons. The garden is most active in the spring and summer, slows down in the fall, and becomes dormant in the winter. Living in Houston, we have little opportunity to witness the changing seasons. Therefore, I want my students to slow down long enough to observe what is going on around them and wait in anticipation for patterns of the upcoming seasons while associating a plant or color with a memory of their youth.

### **FOCUS OF MY STUDY**

My unit, entitled "For Every Season," will be a yearlong study of the garden and how it is affected by seasons. I will teach this unit to my enrichment class using the existing outdoor education curricula:

- *Journey North* is a curriculum that focuses on the relationship between spring migratory patterns and environmental cues.
- *Classroom Feeder Watch* is a program the students will participate in that allows them to take part in a national database focusing on birds.
- *Flying WILD* is a new curriculum that focuses on migratory birds in an urban setting.

Students will also work on a plant study, a book discussion, and several technology activities.

The enrichment class consists of students of mixed grade levels. Traditionally, students have different perspectives about a gardening enrichment class, and these different ideas can cause shifting dynamics throughout the year. In August, the class starts out large, and most students have little or no working knowledge of gardening. Some students enjoy the class; yet others resent it as it can be quite hot outside. Also, students with allergies definitely want to be elsewhere. Over time, those that remain in the class are lively; to keep their interest elevated, I must vary the activities with their moods.

This creates a challenge to me as a teacher. Traditionally, teachers view an enrichment class as a nuisance partially because there is no set curriculum. Teachers who instruct enrichment classes are not necessarily motivated to create their own curriculum. The effort and time required accomplishing this task often results in negative outlooks. However, I am taking a different approach. As I see it, I have an opportunity to both

restore the garden and unite my class by using this garden as an educational tool rather than a community service project.

## **METHODS OF IMPLEMENTATION**

My unit accomplishes these goals by offering a new approach to enrichment classes. In addition to math and science activities, this unit encourages the writers in our class to improve their skills. It includes the typical scientific study of the environment and its interactions; however, it is unique in that it also creates a concrete application for the environment. Instead of reading about food webs and competition, students will have a first hand account of what occurs in the natural environment and use their experiences to create photo essays of these events. Students will also establish a link on the school's website, participate in a national bird database with Cornell University, and develop a field guide of the plants in the garden. Further, there will be a project that will incorporate the students' cultures and feelings regarding a community garden.

To teach this unit effectively, I plan to use several different strategies. These techniques include hands-on activities, field trips, technology activities, group work, fieldwork, and literary studies. Many of these activities will be taken from the *Journey North* and *Flying WILD* guides. Furthermore, three possible field trips include an area nature center, a nursery, and the Mercer Arboretum, all of which will help students experience pockets of undiscovered nature within their city. Throughout the year, students will form valid conclusions about seasonal patterns present in the garden and the city of Houston. To incorporate all of these aspects to accomplish my goal, the unit will be divided into studies that focus on three of the four seasons.

The first study will begin at the start of the fall semester and will encompass August to November. First, we will discuss the history of our garden and its current layout via a power point presentation. Using the *Flying WILD* activity, "Survey of a Habitat," we will identify the four components in our garden. We will then discuss the different types of plants and zones and determine which plants will survive in the zone in which Houston is located. The students will then search through several magazines such as *Better Homes and Gardens*, *Southern Living*, and *Natural History* to create a collage of their ideal gardens. Using seed catalogs, students will make thematic maps of their ideal gardens choosing zone appropriate plants. Next, students will complete a survey of our garden and make an inventory of its plants.

Once all of the above is accomplished, our class will read the book *Seedfolks*. *Seedfolks* is a series of stories about a community that establishes a garden in an abandoned lot. Using the guide the publisher created for the book, we will complete a literary study of the book including activities across the curriculum, reading strategies, questions for discussion, and journal entries.

Students will also set out a feeder and begin our feeder watch. From our watch, we will create a database of the birds visiting our garden. We will journal our observations about the garden and take a field trip to an area nature center or garden to see the ways how different gardens in Houston flourish. Once our garden begins to take shape, we will start the process to have it certified as a National Wildlife Federation's "Schoolyard Habitat."

The second study will focus on the garden during the winter months of December to February. This portion of the unit will consist mainly of hands-on indoor classroom activities. First we will watch the movie, *The Secret Garden*, which centers on a forgotten garden that will be eventually transformed into a lovely haven. Part of the focus of our enrichment class will be maintaining the existing garden. I anticipate that at this point, the students will begin to provide ideas for the redesigning of our garden in the spring. Since the winter weather will keep us indoors, we will use this time in the computer lab to create a field guide of the plants inventoried the previous season. Part of this process will include our reviewing different guides for Houston area gardens to determine how students want pictures and descriptions to be positioned in their guide. Once this has been determined, students will be able to photograph the garden and scan their pictures into the guide. Research of the different plants will be gathered from on-line and library sources. A thematic map that will identify the location of the plants in the garden will be the finishing touch to our guide.

To begin the culmination of our second study, we will complete the teacher led activities in the *Flying WILD* curriculum that will provide background information for birds and are connected to the student-led activities for their upcoming bird festival. In addition to these activities, students will read *Hoot*, a mystery centered on the efforts of two middle school boys to preserve the habitat of burrowing owls. We will complete the literary study of the book with activities for reading strategies and discussion questions.

Finally, it is important that the enrichment class develops its own specific project that gives the class ownership of the garden. Students will plan, design, and budget for their portion of the garden. While it is more cost effective to purchase seeds, a field trip to a nursery may be necessary to choose some of the new plants. Before Christmas vacation, students will plant the seeds indoors for the next study.

The third study will focus on the garden in the spring months of March to May. The students will plant their seedlings that were started before Christmas vacation and maintain the garden. We will submit our certification to the National Wildlife Federation for review. Using the *Journey North* curriculum, we will complete several activities that involve the seasonal cues of spring. One of these activities includes a spring checklist which students will use to collect the phenological, astronomical and meteorological data during this three-month period (Howard 117). Phenology is defined as the study of the seasonal timing of life cycle events. It involves both biological and climatic events including observations of changes in plants, animals, temperature, sunlight, precipitation,

and other weather events. In order to gather astronomical data, students will calculate the photoperiod and measure the length of shadow at noon. The meteorological data involves recording the daily high, low, and average temperatures for this time period. Information needed to calculate photoperiod as well as the daily high, low, and average temperatures will be retrieved from the *Houston Chronicle* website <[www.chron.com](http://www.chron.com)>. This type of study will allow students to learn general ideas and patterns associated with the changing seasons from both local and global observations.

Our class will be responsible for updating a spring calendar. Information for the calendar will be obtained from the “Today’s News” section of the *Journey North* website <[www.learner.org/jnorth](http://www.learner.org/jnorth)>. The calendar will include information about Houston as well as the Northern Hemisphere. This activity will allow students to “track various spring events, and provide a complete picture of the spring’s journey through our home city and across the hemisphere” ([www.learner.org/jnorth](http://www.learner.org/jnorth)).

Activities from the student-led portion of the *Flying WILD* curriculum will prepare the students for their bird festival on or around National Migratory Bird Day. Students will need to construct booths and be responsible for presentations on general bird knowledge, common migratory birds in the Houston area, and personal conservation efforts. This activity will involve much preparation on the student’s part, and it will be necessary to spend time in the computer lab gathering information and pictures. Furthermore, we will continue to journal and update the website and the feeder watch database.

In May, as we are ending the school year, we will reflect on our literary study of *Seedfolks*. This book is used extensively at Johnston Middle School because it is a “quick read.” However, my curriculum unit will take a different approach. Each student will submit a first-person-point-of-view chapter of our version of *Seedfolks*, using experiences gained from working in our garden. This chapter will provide a connection between their experiences in the garden and the student’s culture. Finally, we will prepare the garden for the non-school months of June, July, and August.

## **REFOCUSING ENRICHMENT AT JOHNSTON MIDDLE SCHOOL**

Next year, Johnston will begin its third year of enrichment classes. Upon reflection, the administration has decided that these classes should focus on improving the students’ math and reading skills. Because of this emphasis, I have structured this unit to accomplish these goals. The math connection is made with the use of the environmental education curricula I have chosen and the literary studies will accomplish the reading goals set forth.

In addition, I have designed my unit to be project driven; each phase involves a final product. This is a departure from previous enrichment classes. This structure sets forth short-term goals to be met on a continuum. Yet, there are an equal number of on-going

projects. For example, the students' journals will include reflections and observations of the garden during each season. Students will collect a large amount of data from their observations and activities and will summarize this information into charts and graphs. This information will then be provided to our webmaster and be added to our school webpage which will be updated during each study. This will publicize our progress with the garden and give the students input to the school's webpage.

## **ANTICIPATED BENEFITS OF THE UNIT**

Overall, the plant guide is a tangible product that students can use and expand upon in the ensuing years. In addition, on an individual basis, the students' versions of *Seedfolks* will improve their writing skills, expand their literary study, and allow them to apply and connect this knowledge to our garden project. Furthermore, the bird festival will improve the students' presentation skills by showcasing their work as well as sparking an interest in and informing the students about migratory birds and their conservation.

## **BACKGROUND INFORMATION**

### **Seasons, It's All About the Tilt**

Ask someone – young or old – to name the four seasons. Most will answer winter, fall or autumn, spring, and summer. The definitions of seasons are many:

- a time characterized by a particular circumstance or feature;
- a period of the year characterized by or associated with a particular activity or phenomenon;
- a period of the year associated with some phase or activity of agriculture;
- a period in which an animal engages in some activity (as migrating or mating);
- a period normally characterized by a particular kind of weather;
- one of the four quarters into which a year is commonly divided.  
(*Merriam-Webster's New Collegiate Dictionary* 1042)

Ask someone – young or old – what causes the different seasons? The most common response deals with the earth and its distance from the sun. In the summer, the earth is closer to the sun and it's hot. However, in the winter, the earth is farther from the sun and it's cold. Two common responses – yet two incorrect responses.

The earth revolves around the sun. This journey takes approximately 365 days. Although each day is twenty-four hours long, the length of sunlight, called a photoperiod, varies with the seasons. The sun rises in the east and is at its highest point at midday. It rises higher in the sky in the summer than in the winter. The sun sets in the west. Both its rising and setting times and its location vary from one day to the next.

It is commonly believed that the days are shorter in the winter than the summer. A more correct explanation, however, is that there are fewer hours of daylight and more hours of darkness in the summer. Daytime is that period when the half of the earth in which a person lives points towards the sun. The earth then receives light and energy from the sun. Nighttime is that period when the other half of the earth points away from the sun and prevents any light or energy from reaching the earth.

When the sun shines, shadows are formed. These shadows can be used to determine time. The length of the shadow depends on the position of the sun and it changes in length and direction during the day. As the sun rises, the shadows get shorter. At midday, the sun is at its highest point, and its shadows' lengths are at their shortest. After midday, shadows start to get longer again and continue to grow until the sun sets.

The sun travels in an elliptical orbit. This orbit is fixed, although the earth may move slightly. Nevertheless, this movement out of orbit is insignificant and can't cause a change in temperature. While traveling in this orbit, the earth is tilted 23.5 degrees. In fact, seasons are caused by the tilt of the earth's axis as the earth travels around the sun (Davis 520).

The earth is divided into three regions: tropical, temperate, and polar zones. Although each zone has a distinct climate, seasonal changes are different. The tropical zone is located at the equator; the sun hits the earth directly, and most of its energy is absorbed in a very concentrated area. For this reason, there are no seasonal changes at the equator, and the length of day and the average temperature vary little throughout the year. Although, there are no seasons, the tropical zone can experience a "dry season" or a "wet season." At higher latitudes, in the temperate zones, seasons are evident, and the photoperiod varies because of the Earth's tilted axis. This area is usually humid and has mild winters. At the polar zones, the length of day is more extreme. There is a period of continuous daylight followed by a period of continuous darkness. The polar zones do not receive much of the sun's energy; consequently, the temperature is cold even during the six months of continuous sunlight.

The angle between the earth's axis and the sun changes throughout the year. As a result, there are four seasons of the year in the higher latitudes. In the summer, the sun rises higher in the sky and shines directly on the earth. The earth receives more direct sunlight that result in a longer photoperiod and warmer temperatures. The midday sun appears much higher in the sky in the summer. The summer solstice is referred to as the "longest day of the year" due to the length of sunlight during this day. At this time, the pole is inclined towards the sun. In the winter, the sun is lower in the sky. The sun's energy is spread over a larger area of the earth's surface. The earth receives less direct sunlight and is characterized by a shorter photoperiod and colder temperatures. The winter solstice is referred to as the "shortest day of the year." Not surprisingly, the pole is inclined away from the sun.

Fall can be referred to as autumn or the autumnal season; spring is the vernal season. These seasons are described as equinoxes. During the vernal and autumnal equinoxes, the angle between the earth and the sun is perpendicular. On these days, the earth experiences an equal amount of light and darkness; the temperature tends to be moderate.

Because of the tilt and the position of the earth in relation to the sun, the seasonal changes of the Northern Hemisphere are opposite of those in the Southern Hemisphere. Figure 1 illustrates the dates of the seasons in the Northern and Southern Hemispheres.

Season	Northern Hemisphere	Southern Hemisphere
Summer Solstice	June 21	December 21
Winter Solstice	December 21	June 21
Autumnal Equinox	September 22	March 21
Vernal Equinox	March 21	September 22

**Figure 1: Seasons of the Northern and Southern Hemispheres** (adapted from Dolan 21).

Misconceptions about seasons provide fertile ground for the science teacher. After having these misconceptions pointed out to them, students should be able to better focus on the evidence: the tilt of the axis, climate changes in the zones, photoperiods, and shadow lengths of the suns to reinforce their study. There are countless Internet activities that provide this evidence. The concept may become clearer with the use of visual demonstrations via overhead transparencies and globes. The constant use of the catch phrase, “When it comes to seasons, it’s all about the tilt,” followed by hands-on activities and visual representations will reinforce the accurate concept of seasons.

## **SEASONAL RITUALS AND BELIEFS**

### **Early Astronomers development of seasons**

We live in a time when weather can be more or less predicted, and we can plan events accordingly. However, in ancient times, people looked to seasonal cues of the sun, moon, and stars to plant and harvest crops. In fact, we celebrate Christmas, Easter, and Thanksgiving, all of which were originally pagan rituals to mark the changing seasons. In his play, *A Midsummer’s Night Dream*, William Shakespeare gave special meaning to dreams on the summer solstice. Shakespeare’s story takes place on the evening of June 23<sup>rd</sup>, an evening when men and women dream and fairies can make these dreams come true or more interesting. Whether it is scientific, cultural, or religious, seasons have played an important role to ancient and contemporary societies.

The development of the calendar went through many stages. The Mesopotamians are believed to have first studied stars and plants and created the earliest known “charts of the heavens” (Davis 21). They looked to the heavens for signs and were concerned about the seasons. The Sumerians were the first to record the movements of the stars in the skies, and they created a pattern that is believed to be the first attempt at a calendar. The



Babylonians built upon this calendar and added the concepts of months, hours, days, and seconds.

The sun and the moon were used to predict daily patterns and establish practices for planting crops. A lunar calendar was created that was based on the phases of the moon. However, the moon is an ineffective gauge of time. The lunar year of twelve months adds up to 354 days and doesn't substantiate the "solar year" or 365 days it takes the earth to revolve around the sun. The current Islamic, Chinese, and Jewish calendars continue to be based on the lunar calendars although an additional month has been added. The Egyptians created a solar calendar after realizing that seasons are related to the movement of the sun and stars. Using their sun worship practices, reliance on the annual flooding of the Nile for irrigation, and improved charting of the constellations, the Egyptians produced a solar calendar that is 365.25 days in length and still used today.

In ancient civilizations, the sun was used to determine the passing of the seasons. Ancient astronomers were special priests who were assigned the duty of tracking time by observing the different phases of the moon or patterns of the sun's shadows on various structures. They discovered that the first day of seasons could be determined by measuring the shadows at midday. The shortest shadow is seen at noon on the first day of summer, which is the sun's highest point in the sky. The longest shadow is seen on the first day of winter, which is the sun's lowest point in the sky.

To calculate the beginning of spring and fall equinoxes, other early astronomers used the sun's position among the stars. Initially the early astronomers had to chart the sun's position and motion relative to the stars and then calculate the date and time when the sun reached a particular point. This particular point was based on the idea of a celestial sphere. Originally, it was believed that the sky was a large ball that surrounded the earth. The stars were embedded in the ball. The combination of the stars and the earth made this celestial sphere. The sphere didn't move independently, instead the earth moved and this caused the stars to move. Eventually, the astronomers expanded their idea of a celestial sphere to include a series of two lines called a celestial and ecliptic equator. A celestial equator was believed to divide the northern and southern half of the earth. The ecliptic equator was the path the sun moved through the different constellations. Although the two lines were not parallel, they tilted toward each other and would eventually cross at two points in the sky. The two points were called the equinoxes and represented the two dates when daytime and nighttime were equal.

The Druids desired a more accurate method to determine the first day of the summer solstice. The Druids established the study of cosmology that used the positions, distribution, dimensions, motion, composition, and energy of the heavens to explain natural events. Special stone structures were erected. The most famous of these structures is Stonehenge. Stonehenge was constructed and reconstructed for two thousand years finally being completed around 1100 B.C.E. The general design of this structure was thirty or more tall sandstone blocks arranged in a circle. Lying on top of

these blocks were smaller stones that created an unbroken circle. Finally, a second inner circle of stones enclosed a horseshoe-shaped grouping of smaller stones (Davis 27). Stonehenge was aligned so that on the first day of summer, the rising sun could be viewed through or over small slits between the stones. Standing at the center of the ring of stones and looking northeast, the Druid priests could observe the first rays of the sun on the summer solstice lining up with one particular stone called Heel Stone (Davis 28). The alignment is so accurate that this occurrence is not visible on any other morning of the year. It has been written that Stonehenge may have been an early attempt at an observatory. To this ancient culture, June 21st probably symbolized the beginning of a new year. Even today, a religious group journeys to Stonehenge to dance and celebrate the first day of summer around the remaining partial ring and few inner stones of the structure.

### **Cultural and Spiritual Impressions of the Seasons**

Summer has always been regarded as a time of reflection, growth, renewal, and love. The summer solstice was regarded as a day of pleasure and fun to enjoy the fruits of one's labors during spring ([www.equinox-and-solstice.com](http://www.equinox-and-solstice.com)). Known as a time of fire and light, people took the opportunity to reflect upon seasonal growth, which was two-fold. It was a time to celebrate the first harvest and a time of personal cleansing and renewal.

The autumnal equinox was initially referred to as *Mabon* - *when* day and night are equal. It is considered a time when the land was full of nature's gifts. Although celebrated as the second harvest, it became known as Thanksgiving in the late 1500's. Like the modern day of Thanksgiving, Mabon was celebrated with feasting, celebrating good fortune associated with a fruitful harvest, and preparing for the upcoming winter months. The *Mabon* celebration gave friends an opportunity to gather together and strengthen their spirits in preparation for the upcoming season.

The winter solstice was known as Yule which means "wheel." Traditionally, Pagans lit a Yule Log which burned for twelve hours. To Pagans the winter solstice represented a day that the Sun and the Moon stopped their orbit to anticipate and rejoice in the sun's rebirth ([www.equinox-and-solstice.com](http://www.equinox-and-solstice.com)). Winter marks the preparation for the spring.

The vernal equinox marks the time of year with longer days, warmer temperatures, and the resurgence of life to the earth. The vernal equinox was the day that seeds were planted to prepare for the first harvest. The idea of spring-cleaning evolved from this season an opportunity to remove any negative energy from the winter and prepare one's home for the positive energy and growth of summer.

The study of seasons and their relationship to astronomy is a difficult concept to teach to middle school students. The lights of our cosmopolitan cities dim the luminosity of the stars making constellations hard to distinguish. The students seldom appreciate the

thousands of years of study and thought that has given us our current concepts of time. It is a combination of scientific facts, mathematics, superstition, and cultural beliefs that established our current system of seasons and our solar calendar.

## **HABITAT CONCERNS AND PITFALLS - SEASONAL AND OTHERWISE**

The popularity of classroom gardening is cyclical. A progressive teacher decides to create a classroom outdoor haven for her students. She comes up with a wonderful idea and has adequate support and funding. Parents are volunteering, kids are excited, co-teachers are creating interdisciplinary units, and administrators are happy. This creation of a garden habitat is easy compared with the seasonal upkeep that follows. There are years when the kids just aren't interested in gardening. There are years when the progressive teacher just isn't interested. How will the garden look in five years? Who will be responsible for the garden? Who will be maintaining the garden? What happens to the garden if the progressive teacher moves to another school or leaves the classroom? It is important that all aspects of a classroom habitat are examined. Teachers must anticipate many problems before the first plant is placed in the ground.

I decided to create the garden at the suggestion of fellow science teacher, Mercy Miller. She and I were at a summer workshop at the Bronx Zoo in New York City. We were having dinner one night, and she fantasized about having a school garden in which teachers and students could go to unwind. For three days we talked about what we thought the garden would look like. Upon our return to Houston, Mercy was diagnosed with colon cancer. By December, Mercy resigned, and she died in February. I was very determined to make her wish a reality.

I started with a small flowerbed outside of the science building. Over the next three years and with help from a few teachers, a series of grants were received providing funding to start a larger garden. I was excited. My academic team was excited. I began designing the garden layout and choosing plants, shrubs, groundcover, and grasses. We created beds, built trellises and a pergola, and planted plants with the help of other teachers, students and their parents. The garden was completed and blossoming by the end of May, just in time for summer vacation.

That summer I spent many hours several times a week weeding and watering, taking total responsibility for the maintenance of the garden. I spent my money buying flowering plants that would be in full bloom when the teachers and students returned to school. However, everyone returned and no one noticed my efforts in the garden. I felt that I had never left school and that the garden had robbed me of my summer.

The next summer I had to turn over the care of the garden to a few well-meaning coworkers while I was out of town for a month. Although they had the best of intentions, the garden was not their priority. After a rainy June, an invasive grass took over the majority of the beds. When I returned, the grass had overwhelmed the groundcover, and

the weeds towered over the plants that I had so carefully chosen. The school year began, and a lot of work needed to be done in the garden. As it turned out, however, the students that year had no desire to work in the garden. I realized that this was not going to be a whole class project. Although a few students expressed an interest in working in our garden, there was too much to be accomplished with such a limited workforce of people. For me the garden went from a source of pride to a source of embarrassment.

It was evident that the habitat had turned into a failure. I had two choices: let the weeds take over the garden and remember the brief beauty it had given or rethink the whole project. I began to reflect on the growing seasons of the garden. Many of the perennial plants had been discarded during the weeding sessions, and the groundcover never established itself. The remaining plants were Texas drought-resistant plants, a few ornamental grasses, several shrubs, and two crepe myrtles. These plants experience definite seasonal growth. During the summer, these plants flower and bloom until late fall. In December, the plants become dormant and reappear in early spring. The garden still had life left in it.

I talked with a landscaper and he suggested that I sterilize the majority of the beds starting one bed at a time. This meant that I had to remove all the plants and replant them in a type of “holding bed.” I used a strong herbicide, covered the area with a heavy plastic material, and left it for three months. Once the sterilization was completed, my class added soil and plants. At this point, we have prepared a second bed and will sterilize it during the beginning of the next school year.

Last year, my enrichment class spent much time working in the garden which was in a disastrous state when the year began. As diligently as they worked, it was still overwhelming. I have learned that at least part of the garden should be attractive and require only a minimal amount of maintenance. Students remain motivated and want to work to improve the other parts of the garden. I have also discovered an optimal number of students that can work productively in the garden. Our workable number is fifteen students. Too few students make the task unattainable. Too many students lead to overcrowding and arguing.

Upon reflection, I have discovered that plant choice is very important. The best plants for our garden are those which are native to Texas and drought-and-heat tolerant. I suggest that prospective classroom gardeners spend time researching plants that work best in their climates and require the least amount of maintenance. These plants will require less care; consequently, the teacher will not be constrained by summer garden maintenance. My motivation is to create a garden that will bring me hours of enjoyment instead of work.

Collaboration is essential when planning a classroom garden. The work and planning is overwhelming for one person. However, too many ideas can be detrimental to a project. It is essential that the group of planners shares a common vision and agrees on

an overall design and type of habitat. I have been fortunate to have a number of coworkers interested in the project especially with regards to plants and their placement in the habitat. Compromise is essential to a cohesive working group. Be appreciative of all the interests and opinions. Embrace the great ones and work out solutions to any differences.

There are many rewards and the pitfalls of a classroom garden. Plant selection and collaboration make the effort easier. Long range plans for the garden must be considered. I was naïve in my initial planning; it remains a work in progress. It may take several years to create the ideal habitat, but it will be a labor of love.

## **CONCLUSION**

I am excited about my unit and the changes that continue to be made to the garden. When the project began five years ago, I didn't trust my own instincts. I asked others for their opinions and followed their direction for the layout and plant selection. As a result, the garden never became the haven I envisioned. It's time to trust my own instincts. Having a clearer vision of what I can accomplish with the resources available, I am determined to create a better habitat. What I have created is an enrichment class with a focus which encourages students to work together to create web links and literary circles. I want my students to enjoy working together and learning new technology. I want them to be proud of their garden and excited about their enrichment class. Together, we will plan, trust our instincts, and create a habitat that will become a learning instrument for many future students.

## **LESSON PLANS**

### **Lesson Plan 1: Thematic Map of the Team 8M Schoolyard Habitat**

#### ***Purpose***

To create a scaled thematic map of our garden.

#### ***Materials needed***

Examples of different types of maps  
Chart paper  
Graph paper  
Metric ruler  
Template of garden  
Template of geometric shapes  
Pencils, colored pencils, erasers

#### ***Procedure***

The lesson will begin with a discussion of maps. Examples of different maps will be distributed to the class. The examples will include: a road map, a map of Johnston

Middle School, a Metro Rail map, a topographical map of Enchanted Rock State Park, a map of Brazos Bend State Park, and map of Houston area gardens. Next, students will brainstorm about the distinguishing characteristics of each map and the ideas will be recorded on chart paper. Students will share their ideas about the purpose of maps. We will also briefly discuss maps drawn to scale. Using the maps of Brazos Bend State Park and Houston area gardens, I will ask the students to name the similarities between these two maps. The response I will focus on is the identification of trails and location of points of interest.

Each group of two students will be given a template of the garden layout and a metric ruler. The template will include the designs of the beds, the foreign language temporary buildings, and the science building. Using our classroom garden, students will measure the length and width of the beds. Prominent structures in the area will be noted on their template.

Using graph paper, students will redraw the garden to scale including all the structures in and around the garden excluding the plants. These maps will be scanned into a power point presentation. Once the garden inventory is completed, plants will be added to the map. Map presentations will be part of a Gallery Walk in May 2005.

## **Lesson Plan 2: My Ideal Garden**

### ***Purpose***

To create a thematic map of an ideal garden using knowledge gained about plant zones, climates, and basic gardening techniques.

### ***Materials***

Graph paper  
Magazines (*Southern Living, Natural History, Better Homes and Gardens*)  
Seed catalogs  
Spreadsheet of garden features  
Garden books  
Tag board, glue, scissors  
Pens, pencils, colored pencils  
Erasers

### ***Procedure***

To begin this lesson, I will read the section of my unit entitled “Tales of Different Gardens.” Students will share stories of different gardens. Using magazines, students will cut out pictures of what they consider to be ideal gardens.

Students will be assigned the task of creating an ideal garden using their knowledge of maps, plants, and zones. The map must include at least two beds with plants that are zone appropriate, three additional garden structures, and the four components of a habitat.

Students use the *Better Homes and Gardens* website on garden design to choose a template for their garden. Using the graph paper, students will complete a template for their garden and create a field guide for the plants in their garden using a flipbook format.

The finished product will be scanned into a power point presentation that will be shown in a Gallery Walk in May 2005.

### **Lesson Plan 3: Almost a Year in the Life of My Plant**

#### ***Purpose***

To create a photo essay of one plant in our garden documenting its growth and changes during the three seasons.

#### ***Materials***

Disposable cameras or a digital camera  
Poster board  
Glue, scissors  
Pens, pencils, erasers

#### ***Procedure***

Students will be given a list of plants in the garden that experience seasonal changes. Monthly, student will photograph and write a journal entry describing one of these plants. The journal entry will include height of plant and detailed observations about the plant. This information will be typed and the picture and reflection will be placed on tag board.

Finally, the journal entries and photographs will be organized by month to create a flipbook that will be shown at a Gallery Walk in May of 2005.

### **Lesson Plan 4: Cultural Significance of Seasons**

#### ***Purpose***

Students will research the cultural significance of different seasons.

#### ***Materials***

Various resources including encyclopedias, folk tales, poems, and myths  
Computers with Internet access  
Paper, pens, pencils, and colored pencils

#### ***Procedure***

Using library and Internet sources, students will research the cultural significance of spring, fall, winter, or summer. Students may research a particular culture's perspective on a season or different cultural views on a particular season. Folk tales, poems, myths, or other literary interpretations can be used to write a report of their findings.

## ANNOTATED BIBLIOGRAPHY

### Works Cited

#### *Teacher Resources*

Apfel, Necia H. *Calendars*. New York: Franklin Watts, 1985.

This book provided information about the cultural significance of seasons.

Davis, Kenneth C. *Don't Know Much about the Universe*. New York, NY: Harper Collins Publishers, 2001.

A good source for of the ancient history associated with seasons.

Daniels, Harvey. *Literature Circles: Voice and Choice in the Student-Centered Classroom*. York, Maine: Stenhouse Publishers, 1994.

A guide detailing strategies to incorporate literature circles in a classroom.

Dolan, Graham. *The Greenwich Guide to Day and Night*. Chicago, IL: Heineman Publishers, 2001.

An excellent source for information on seasons.

\_\_\_\_\_. *The Greenwich Guide to the Seasons*. Chicago, IL.: Heineman Publishers, 2001.

An excellence source for background information on seasons.

Doran, Madeline. *The Pelican Shakespeare's A Midsummer Night's Dream*. New York: Penguin Books, 1987.

This work includes background information on Shakespeare's and the play, *A Midsummer Night's Dream*.

*Equinox and Solstice.com*. W3Commerce, Inc. 2001. <<http://www.equinox-and-solstice.com/>>.

This website has good information about the equinox and solstice.

*Flying WILD*. Houston, TX., Council for Environmental Education, 2004.

This guide is written specifically for middle school students and will be published in 2004. It provides a study of migratory birds in an urban setting. The final event is a student-led bird festival.

Foss, Diana M. and Ronald K. Jones. *Creating a School Habitat: A Planning Guide for Habitat Enrichment on School Grounds in Texas*. Houston, TX., Texas Parks and Wildlife Urban Program, 2000.

A guide detailing methods to set up and maintain a school habitat.



*A Guide to Teaching Paul Fleischman's Seedfolks*. 2000.

<<http://harperchildrens.com/schoolhouse/TeachersGuide/seedfolks.htm>>.

This site provides teachers with guided questions and activities for *Seedfolks*.

Howard, Elizabeth and Jessica Wiley. *Journey North: A Global Study of Wildlife Migration and Seasonal Change*. South Burlington, VT., Annenberg/CPB, 2001.

A comprehensive study to migratory patterns and seasonal cues integrating technology, math, and science.

*Ideas for Education, Students, and Volunteers*. <<http://www.nwf.org/education/>>. 2004.

This site provides information on the four components of a habitat. It also includes information for certification as a Schoolyard Habitat.

*Journey North. A Global Study of Wildlife: Migration and Seasonal Change*. 2004. Annenberg. <<http://www.learner.org/jnorth>>.

This website provides a comprehensive study of migratory patterns.

*Merriam-Webster's New Collegiate Dictionary*. New York: Merriam-Webster, 2003.

Contains a good definition of the seasons.

### ***Student Resources***

Fleischman, Paul. *Seedfolks*. New York, NY: Harper Collins, 1999.

A series of short stories about neighbors in an apartment complex that turn an abandoned lot into a community garden. Each story is written with a cultural perspective.

Hiaasen, Carl. *Hoot*. New York, NY: Random House, 2002.

This mystery centers around two boys and their efforts to protect the threatened habitat of burrowing owls.

*Houston Chronicle*. <<http://www.chron.com>>. 2004.

This site will be used by students to update their astronomical and meteorological data for Journey North activities.

“Plan a Garden.” *Better Homes and Gardens Magazine*. 2004. <<http://www.bhg.com>>.

Illustrations from this website include simple designs and plant suggestions for several different shaped beds.

“Plant Finder.” *Better Homes and Gardens Magazine*. 2004.

<<http://www.bhg.com/bhg/plantfinder/>>.

A comprehensive site that lists a myriad of information for common garden plants.

*Welcome to Classroom Feeder Watch.* 2004. Cornell University.

<<http://birds.cornell.edu/cfw/>>.

This site, created by Cornell University's Ornithology Department, provides all the information needed to participate in a classroom feeder watch. Students input their observations into a national database.

### ***Filmography***

*The Secret Garden.* Videocassette. Hallmark, 1994.

The story of a young girl that moves into a home with a garden abandoned when the wife dies in childbirth. The abandoned area is transformed into a vibrant garden and a child learns about the mother he never knew.