Agriculture: A Retrospective View

Stephanie Johnson
Helen S. Faison Arts Academy

OVERVIEW

Just because something does not do what you planned it to do does not mean it's useless stated Thomas Edison a great inventor. This is important with dealing with anything, because I have found out that what is important to others may not be important to you. Also I have found with gardening you will plan for your plant to bloom but it may not appear until next year. The statement above speaks to this and other intended inventions.

A garden whether on a farm or at a school is an example of an ecosystem. An ecosystem is a group of living things that depend on what it inhabits (environment) to live. All ecosystems have webs of social and biological relationships between them such as the gardener and garden. This can also be recognized with the tools used in the garden thus building a relationship again adding a technological aspect to it, the tool and the plant. These relationships will be explored through developing an Edible Schoolyard and explained in this curriculum unit Agriculture: A Retrospective View.

In gardening this relationship can be seen through planting and harvesting. Through inventions this relationship is also true. Let me talk a little about inventions that have been so important in society and have made life easier. One invention is hand tools. Hand tools and tools are something that can be used or implemented to get something done. This implementation makes the outcome happen.
The invention of tools has progressed over a period of time. This progression has assisted in making something hard to complete easier. Most of the inventions made for agriculture have moved from manual to machine. When I speak of agriculture I am talking about a small garden called the Edible Schoolyard. The Edible Schoolyard is a small source of agriculture for my school community, with designing, nurturing and harvesting done by the school and Grow Pittsburgh. I and my kindergarten students will

be enjoying the knowledge that we will be getting from this endeavor. We will be using tools and exploring the relationships of the ecosystems in the garden. We will learn about three content areas history, technology and science. These three concepts will cover several areas. History will look at the chronological effects on planting and gardening tools.
Technology is sometimes said to be a science and I will be looking at the impact it has had on society related to the use of tools. The sciences will be explored through the lessons that will be taught to my students using the environment of the Edible Schoolyard.

Inventions have been so important in making cultures help us to become adaptable to everyday situations. Tools the word can be used in several contexts. For example my students know that a tool for the classroom environment is a pencil, scissors or paper.

This unit will be written for an urban population and as stated previously at the kindergarten grade level. The unit addresses the special needs of culturally different students by making science and history accessible and meaningful to the students and exposes them to the traditional way that these two content areas have been used. This also makes it easy to include some other strategies that will be geared to include different learning styles and allow for an assessment of the material. I will be including the basic scientific approach and several other theories. These theories will assist with delivering the lesson. One of the theories relate only to the tools; the other theory will relate to students' ability to learn the information. Both theories are based on motivation. What I mean by this is the person's motivation will have a great deal to do with the outcome especially with the technology part.

Now let me talk about gardening. Gardening is the art of growing plants with a goal. It can be considered a plot of land with fruit, flowers or vegetation. Gardening can be in residential and non-residential environments. Gardening compared to farming can be distinguished between scale and intent. Farming is generally a commercial activity. Gardening is done on a smaller scale and mainly for personal reasons.
The earliest garden was in Egypt 1400 B.C. (Britannica Article-9365244)

The benefit of taking care of a plant is learning responsibility. It helps with learning about relationships. Throughout this unit I will ask how I can build horticulturist, students who enjoy the land and what can be done to the land. How I could connect them to the land through letting them observe and be a caregiver. They will best do these things through involvement. They will become connected through experiencing the cycles of climate and the plant. Creating this environmental laboratory will take organization and input from my students and me. Although, plants play a major role in our lives such as producers of oxygen, roles in medicine, clothing, fuel and of course food, my students at this grade level will only be able to grasp some of this. We will discuss food and cycles in detail. We will be identifying some of the parts of a plant such as root, seed and leaves. This will be an interesting unit with a vocabulary and ongoing activities for the students.

RATIONALE

I will be looking at two parts in this section History and Science. Each will focus on developing a particular content. The content that will be developed will assist with the responsibilities of doing a garden and how technology helps with that responsibility. My students are from an urban setting and where farms are not often seen. I have taken into account these factors.

The first part will be history as it relates to tools and their origin. The strategy used in the technology portion will involve motivation for use of the tools. I will look at how tools have been helpful in society. Tools are part of the technological movement.

How has technology helped society survive? First of all, let's try to define technology. It is the use of tools, machines, materials, techniques and sources of power to make work easier and more productive. Science deals with understanding how and why things happen and is subdivided into many specialties. Technology is one of the subdivisions. The earliest technologies converted readily into naturally occurring natural resources such as minerals, wood and vegetation. In Caroll Pursell's book there are "four distinctive characteristics about technology" in the sixteenth century, (Purcell p.10)

- It was primarily a handcraft technology and most were hand tools, although there were some machines.
- Tools were mostly made of wood.
- Things were made individually one at a time by a craftsperson.
- A technological change was the direct result of the crafts people's knowledge.

Technology is as old as civilization. Some of the tools of primitive time were made of stones. It follows a progression from simple tools with people giving the source of energy to complex, machine driven tools. The earliest technologies begin with rocks, woods and vegetation. This was used with simple tools. They were used with processes such as carving and scraping. In order to get the tools that are used in a typical garden, technology had to progress. Fire was created and this led to metals. This form of energy assisted with making metals and this is where the famous garden hand tools come from. As I speak of tools they make life easier and less complex for the user. Imagine digging and plowing with your fingers. That would be a tedious belaboring job. This probably motivated the progress of the tools. As tools increase in complexity knowledge is needed on how to use them.

This brief conversation on technology brings me to the heart of this unit. How innovative are the tools that we use presently? Can the tools we use make it easier than using another? Do certain tools make completing a garden quicker? I will ask these questions. When introducing two of the tools, I will be relating them to the technological diffusion of there use. How are tools accepted by society? Probably how they are introduced and how well people adapt to them.

While researching in a technology graduate class I learned about the correlation of human needs and how some emotional attachments may occur with using new products. I found this one to be interesting, so I will be using it in this unit. It is called Rodgers Diffusion of Innovation Theory.

Using Everett Rodgers Diffusion of Innovation Theory, people adapt to products (tools) – Diffusion is the process by which an idea is accepted.

Using this concept the teacher would need to have careful observation of the classroom. For example if you are introducing a tool, how is it adopted by the core population that will be using the tool? That population will be my students. The adoption will be depicted through what we call Rodgers Adoption / Innovation Curve. This is a graphic organizer put into the five sections listed below. These sections will be used to provide a pictorial view as well as a mathematical view. The section will be as follows - innovators, early adapters, early majority, late majority and laggards. The brief description of these first would be innovators are people who are brave wanting something new. They may be the people who make new things. Early adapters are easy to be influence by opinion and they are leaders in making an opinion about the tool and are willing to try new things out. Early majority are people who accept change easily. They are the easy to persuade. Late majority are skeptical and will use only if most others are using it. Laggards are people for the old way critical to change. This reminds me of my grandparents who had definite opinions about things and changing was not an option. Laggards during my explanation will be called traditionalist.

I will put my students on this though they will only have two particular tools. The Bell Curve is to be used slightly different instead of percentages. It will be through tally marks within each section. The tally marks are used during the regular school year so my students can read it themselves. The bell curve is used extremely well with value based management. It looks at how society values a product or an invention.

Diffusion research bell curves are based on the characteristics of the tool and how its influence the population and decision making characteristics. What will influence them to adapt to it? What is the difference after adoption? How was it communicated that lead to influence their decision? I will chose two tools that basically do the same job but may look different or easier to handle than the other. Then do this diffusion theory on them.

We will also learn about the history of the plant we have chosen for the garden. The plants we have chosen were based on edibility and core information related to teachable moments. Some of the plants were selected as in a floriculture sense. (Beauty) This was to make the garden aesthetically beautiful. To teach about plants the students will have on hands experience. This will happen through the monitoring and caring for the plants. The students will have particular jobs throughout this process.

The other concept for this unit is making my student aware of ecosystems through on hand learning. Some of the core concepts of ecology that will make my students eco-literate are how the lesson will provide examples of the relationships of these systems.

They will see the interdependence of the systems. Every part is connected and dependent on the other. The systems are also multi structured and integrated with boundaries such as a plant is. They recycle themselves in a continuous pattern. One important point is that all ecosystems are open systems, which means they have to have a continuous flow of energy to stay alive. The sun giving the plant energy to grow is an example of this energy. In the lessons the students will learn parts of a plant and where its nutrients come from. To get them to learn this will be explained in the strategies section.

Let me say a few words about Science and young children. Young children use all of their senses to observe their environment they will build a repertoire of characteristics about it based on their experiences. They can communicate this through describing, drawing and writing small sentences about what they observe. This is because they are more apt to describe what's happening than to explain cause and effect. At this age their view of the world is highly egocentric. They have difficulties imagining something outside of themselves. Letting them get direct extensive personal experiences with natural objects will help with building basic scientific skills. These scientific skills will be helpful in most all of their learning situations. This unit will attempt to provide this as a foundation for this growth.

OBJECTIVES

The objectives for this unit are very important because to implement the lessons I will be looking at how I can best teach this lesson based on solid practices. These practices will be evident in each lesson with all of their lessons.
The Pennsylvania Kindergarten Standards were designed to assist with and give a framework of guidance on what kindergarteners should know and be able to do.

In Science and Technology there are eight objectives that will drive this unit. I previously stated that Science covers a great deal of subdivision. The first of these is unifying a theme. This is identifying and describing what parts make up a whole. I would integrate the concepts of parts and whole whenever relevant and let them explore realistic models of this. They can get this through active learning. They will also identify observable patterns. This can be recognized through seasons and through the growth of the plants. They should be able to recognize these changes.

The second is inquiry and design. In this area my students will help with planning and designing a garden and all of the bulleted information will be present.

*Build introductory vocabulary of scientific terms
*Form clear expectations based on observation
*Participation in common experiments
*Connect knowledge and new knowledge to build understanding or refine concepts.

*Use senses to observe, collect information, classify and describe.
*Demonstrate understanding of the process of scientific inquiry through investigations, questions of relevance, making predictions based on experience or observation.

These are mainly through experiments and observation. The edible garden will be a resource for experiments. Letting them have hands on experiences with planting and weeding will help. This will also be used for the biological sciences. The biological sciences cover the life cycle. These are some of the major aspects that are present.

*Describe basic needs of plants and animals
*Describe similarities and differences
*Identify life processes of living things
*Living things have parts with specific functions
*Explore characteristics that are inherited
*Describe and record living processes

I will provide observation time and documentation. A checklist will be made. Through the art infusion portfolio I will have for my students to do they will be able to draw and paint. To make it suitable for an older group of students' disposable cameras can be used.

The fourth one is where my students will get the experience through the use of the innovation/diffusion theory model and they will be using the tools to maintain the garden. They will be seeing artifacts from a museum at the lending library. I also will show them some examples of simple machines such as a wrench as opposed to a spade so they can see the difference in moveable tools. I am also going to let them see an electric drill because it is an upgrade from the hand tools. The signs that will be hung on the benches will be hung with the drill. These signs tell the name of the garden and grade level. The objectives will be to identify examples of technology and how these impact various aspects of daily living. The impact will be emphasized through comparing and contrasting of the tools. They will experiment with simple machines through the use of the tools. They can learn and identify how materials might arrive at a work site. Some one thought of an idea and invented them.

I would like to provide and design a learning center and a work station of levers, pulley and moveable gadgets. Having a learning center will give them more opportunity to explore tools. This also will help me with transitions. I mean going to another lesson.

The fifth will be through the use of technological devices. This objective is closely related to four. They will be using all sorts of gardening tools. They will have two tools and will have to select one of the tools to solve a simple problem.

One of my main concerns and my school communities concern is the environment and ecology. Ecology is the study of plants related to its environment. They will be able to identify products that come from nature and know that all living things need air and water, because of the diverse approaches that will be used in the lessons.

Such as, the soil brought to the school site. We are using as a resource soil analysis and how well the plants grow on the soil that is present or did soil come from another source. We had to bring ours in after the analysis. The soil present was hard.

The sixth objective is agriculture and society. Here we will talk about the type of plants. Since our garden is edible we can talk about the importance of having a garden and a farm. This contrast is a good example of the importance of plants to society and to the environment. Plants help the environment stay healthy. The environment also depends upon our relationship with it.

The seventh will be ecosystems and their interrelations with the environment will be discussed using various ways to lean about them. For instance I could read a story such as the Hungry Caterpillar or The Tiny Seed. Both of these books provide a cycle such as a caterpillar turning into a butterfly and the seed into a plant. This is a literary way to explain this. I will use this way and others.

The eighth will be about how humans effect the environment this closely relates to how they take care of the things such as the plants. If we take care of the environment it is a nice place to live and it can provide food.

The other content area that I will focus on is Social Studies/History. One of the objectives is scarcity and choice. This reminds me of some of the reading in this class about having funds to purchase things. This is the concept that some things are limited to some people such as certain resources based on their income ability to obtain. The second one under social studies is historical analysis and skill development. The student will get and idea of this when showing pictures of tools and using the lending library about tools.

In this unit I will expect my students to develop a growing curiosity and interest in plants and living things. They should be able to observe and describe the properties of a plant. They will get the opportunity to compare similarities of the school yard garden with a farm through a field trip. They will also compare tools utilizing the Carnegie Museum of Natural History looking at a thematic kit Archaeology and Tools. To get information about this kit go to http.//www.carnegiemnh.org/doe/programs/loan.html

They will acquire a vocabulary associated with plants by using a vocabulary bank in each lesson. The vocabulary will assist with having a rich vocabulary.

We will also discuss the importance of safety related issues that come with on hands investigations. They will be following indoor and outdoor established rules. Never put anything into your mouth. Avoid touching your face, eyes, mouth and ears while working with plants and material. They should always wash their hands after handling plants and material.

Successful facilitating will make this unit come alive for my students. An occasional comment to sway them will help with the objectives and interaction between the student and the environment.

STRATEGIES

In the community of a school yard garden a multitude of resources can be found. One of the strategies will be to facilitate the structure of the lesson. To get the most out of the content there will be a pattern in the lesson design and delivery.

As the teacher / facilitator of the lessons there are some key points in the lesson for the students. This will establish relationships between the student and the material and create certain interaction patterns. Some of the mechanics for establishing this consistency are:

- Have the material ready before the lesson begins.
- Keep the introduction to the material brief and concise.
- Think of safety and be consistent with the rules.
- I like to ensure that active learning is going on at all times.

To do this process I would have a check list of this for every lesson I find this to be very helpful. These forms will help reflect a thinking process that will help me plan effective lessons. This is like a lesson plan but gives more than the behavioral objectives that is normally seen in a standard teacher's lesson plan. Let me explain how I am going to use it. First, I would have the lesson idea. I would have this idea associated to new material or introduce an idea based on extended material. Next I would start with my opening that will capture more than one of my student's senses. This will engage all learners. I want to engage them to be observers because historically gardeners and farmers are said to have a keen eye. They watch their plants and crops for changes. These changes will tell you if they are growing or not. The visual arts portfolio will develop this skill. When this comes up in the lesson my question will be draw what you saw in the garden at the farm or using the tool. The drawing will act as a visual arts piece and follow-up. I like using this as a closure as well.

The next part is the middle of the lesson this is where the steps of discovery and learning should take place. The questions will facilitate the discovery to takes place. The lessons are interesting and they have some material that will be new to my students but in the science curriculum that I teach, they will have learned the parts of a tree. I do believe they will be equally surprised to find out that a plant has the same parts. The last part of the lesson is a follow-up and this is the art portfolio. I use this to check my student's comprehension and understanding about the lesson. Throughout this process I like to watch for signs of achievement. This will let me know if they met each objective of that particular lesson.

Another important point is to resist the urge to ask too many questions or do too much during the lesson. Let the students actively participate. I always will extend a lesson instead of jamming in too much information. I like to stay flexible when doing lessons of

this sort, because hands on activities require great flexibility. The visual art component at the end of each lesson through a drawing will pull the lesson together for them and provide a transition for me. The lessons will be introduced in an order to explain parts that make up a garden.

LESSON 1

Vocabulary Words

Compare
Soil
Garden
Plant
Nutrient
habitat
sand
silt
clay

Material

Garden photos/pictures
Soil
Rock
Drawing paper
Crayons-25
Pencils-25

This lesson will take three classroom science classes.
What makes a garden?
Introduce the concept of a garden. Do this showing picture of various gardens and get information from their prior knowledge. Define the vocabulary words. I would let my student visit the schoolyard garden. They will have visited it in its initial state. They will watch the soil test. Although they will only understand the elementary phase of this it will be a good experience for them. This will begin our first lesson. The soil is not good enough for a garden and plants so a truck must bring in the soil. This will be a wow moment for them. Without losing the focus of this lesson do come back to the equipment that brought the soil. In the tools lesson some of the students will pick this up anyway.
I would explain that the soil has some key elements that are important to a successful garden. It provides nutrients to the plant. It is a living system of very small rocks. I would like to give them some background information about soil. This background information will help them understand the importance of the soil.
Soil is important it comes from the freezing and thawing of solid rock. For my student grade level a visual comparison would be better. I would have a big solid rock and some soil for comparing. It takes a very long time for a rock to turn to soil. Actually it is said to take over a 100 years for just an inch of soil. Soil is made up of three types of rock particles sand, silt, and clay. Our soil was mostly clay. That's why we needed some to be brought in. Although soil is made up of decomposition such as in compost this will not be

part of the discussion. I will concentrate on the fact that soil is important because it is a living ecosystem. It feeds insects and plants. Some of the insects are ants, slugs' potato bugs and worms. These insects my students have already seen. Let the students draw a picture of a garden they have seen or plants they would like to see in soil.

Before you go any further order the lending museum artifacts for lesson three.

Lesson 2

Vocabulary

Water
Sunlight
Grow
Energy

Material

Permission slip (Reilly's farm lesson five)
Drawing paper
Magic markers-25
Hose
Water can
Storybook

This lesson is to give my students background on plant growth. We have already discussed soil. So what else do plants need? They need sunlight this is called photosynthesis. My students are too young to understand this process in its entirety but I will read a story about it. I would read the story. After reading the story I would talk about how important it was for the sun to be present for the plant to grow. The sunlight sends heat to the plant and it grows from that heat. The sunlight gives the plant energy. I am simply going to explain this concept as if you are playing and running this is energy or after a nice rest you have energy. This is what the sun does for the plant. It gives energy to the plant.
Another important aspect of growing plants is water. Water is vital for plants. It helps the leaves remain firm and promotes the total growth of the plant. The water carries nutrients as well. Plants' need for water depends on the climate. It may be hot, dry or windy and how well the plant can tolerate the conditions and how far the plants roots are in the soil. Plants can be watered any time of the day. The best time for me is after the sun goes down. Most gardeners like to water early in the morning, because this allows the leaves to dry and keep the moisture out. The water should only go onto the soil. After the story and the discussion about water, I want to show them how they will be watering the garden. I will introduce the hose and the watering can. I will explain that these two items are tools. They will see both ways these tools work and will be given an opportunity in a

later lesson to water the plants. Now they may draw a picture of the two major things a plant needs, sunlight and water. The picture should be about how to take care of a plant and some form of water even if it does not rain.

A permission slip to the farm should be given to the students. I fine it easier to do this earlier so that I am not waiting for someone to bring it in at the last moment. I collect them and give out as needed as the trip comes closer.

Lesson 3

Vocabulary

Tools
Spade
Hoe
Tally marks
Artifacts
Museum

Material

Museum artifacts-tools
Scissors-1
Paper-1
Hoe
Spade
Blocks
Puppets

This lesson will be about the care of your garden. The word tools will take on a new meaning. A garden must be maintained and there are tools that help make this easier. I would also have the Educational loan collection of artifacts from the Carnegie Museum of History. http://www.carnegiemnh.org/doe/programs/loan.htlm . The kit title is Archaeology: Tools and Technology. These tools are replicas of the first tools ever made. I will discuss how important it was to have tools. How tools help you implement something. Using some of the things in the classroom I would talk about crayons, scissors, pencils and paper. These items help get your work completed and that is what a tool is. It helps you get something done. Some teaching material accompanies this kit. I will use the materials provided. This lesson will take up four periods of social studies at this time. Two periods devoted to the kit and two to the lesson. I would introduce two

tools, a hoe and a spade. While the demonstration is going on I would show how each tool works and explain its use. These will be plastic ones. I will have twenty five of each of them. The number of tools will be important because you want to see which one is the most popular. I would use this to do the basic study of what product technology piece was accepted by my group of students. The study is **Rodgers Adoption/ Innovation Curve**. This is found in value based management. This is a simple simulation of it. Some other factors will come into play such as if the leader in the group is picked first one of her/his friends will follow. I will not pick that person until probably toward the end, since I know the personalities in the classroom. After they have made their choices two consecutive days and played. I will the next day put them the choice of tools on a bell curve using tally marks in the four sections of the bell. The sections are as follows- innovators, early majority, late majority, and traditional (laggards). The next day is important because the first day is like a test of the product. It will be interesting to see which will pick nothing to role play in their garden the next day.
http://www.valuebasedmanagement.net/methods_rogers_innovation_adoption_curve.html .

I will use a checklist to keep track of who picked what. They can only pick one tool and must keep it. After they have chosen their tool I would see which one has the most influence and why. The students can use this to role play taking care of a garden. They can use the puppet theatre to assist with the role playing. The area can be used to build garden beds using the blocks the first and the second role playing will be the same with nothing added to it.
They can now draw a picture of themselves using their favorite tool.

Lesson 4

Vocabulary

Seed
Biennial
Perennial
Annual

Materials

Flowering pots-25
Seeds- various kinds
Soil
Drawing paper
Colored chalk- 25
Plant-3 annual, biennials, perennials

Where do seeds come from? This will not be a major discussion with me. I will use this lesson to develop cross- curricular lessons. To make this progress easy a KWL graphic organizer should be started. I will start out finding out what the students know filling in the chart. I will give a detailed explanation about this chart at the end of this lesson and a copy of it. We will be identifying the seed and telling what it does. I will have different seeds for the students to see pumpkin seeds, navy beans, Lima, sunflower, daisy, and string beans. This is to show a variety of different forms of seeds. I will have some of them with their flower parts intact so that they can see that a seed is self producing. I will begin with talking about the seed s life cycle. Seeds that are annual. These are seeds that come season to season and they complete their life cycle in a year. I have included the next two because it is always a good thing to take your students to the next level. I often like to challenge them. The biennials are vegetables that come back the next year such as cabbage or carrots. I will also talk about perennial plants that last many, many years. I would show examples of some of the seeds and the plant that they will become. Some of the students will have seen these plants from home gardens or other places. The lesson will be to make sure all learners have been exposed to seeds and certain plants. This is when the students will get an opportunity to plant a seed in a small pot and practice caring and watching it grow. The portfolio drawing can be them holding their favorite seed. The cross curricular lessons are as follows.

- *Math*- counting the seeds using them to estimate. Then actually counting them.
- *Reading*- Phoneme Segmentations such as how many sounds in a word. Use the seed to signify how many sounds you here in a word. In the word garden you would only here the sounds g-r-d-e-n. This would be the correct way because they have not learned the different sounds of vowels just the short.
- *Social Studies*- The history of the seed. Where it is most popular as a country or ethnic group such as Okra or Corn (maize).
- *Art*- Seed collage. Draw a picture of a plant and put the seeds in the drawing gluing them into the picture.

Review the lesson points with students. While reviewing the students will enjoy slices of oranges and apples in which they will get an opportunity to see another seed.
To follow-up the students can participate in doing the KWL graphic organizer. This chart is done in segments. The first part of the chart is done prior to the lesson because it asks the question what I know about seeds. This is where the K comes from Know. The second section is what I want to know about seeds. This is where the W comes from what. The L is done after the lesson what I learned about seeds. L means learned. This graphic organizer can be found in the appendix.

Lesson 5

Vocabulary

Farm

Pollinate
Blossom
Strawberry

Material

Bus
Permission slips signed
Paper
Crayons-25

This lesson will be devoted to a field trip. This is an important trip because my students will actually see a farm. This trip is so they can compare a garden to a farm. This farm also has a garden in it. They have school tours and on hand activities for my students. The name of the farm is Reilly's Summer Seat Farms in Sewickley Pa. This is a rural area on the outer part of the Pittsburgh area. The tour will be in the month of May. These are called the Blossom tours. They learn all about a strawberry patch and a strawberries life cycle. They will also look at pollination and how it helps with plants. The students will ride around on a hay stack and see that piece of equipment. I will take the time to explain that this is a tool as well.
A permission slip will be needed for this field trip. The permission slip should be given out in lesson two.
To contact the farm for information – http://www.reillysummerseatfarm.com
When we return from the field trip I will ask them to draw their favorite part of the visit. They can share their picture with the group.

Lesson 6

Vocabulary
Stem
Leaves
Flowers
Fruit
Leaves
Seeds
Paper
Crayons-25

Material
Potatoes
Soup pot –large
Celery
Cabbage
Vegetable broth
Cauliflower

Apple
Sesame seeds

The point of this lesson is to review parts of a plant. This lesson will involve a cooking lesson we will make Stone Soup. This is a story that is a folktale it is an imaginary pot of soup. Our soup will be real. I will read the Story Stone Soup. As I review every part of a plant. A part of a plant will be added to the pot.

Roots- Did you ever pull a plant from the ground? The things in the soil are called roots. Roots hold the plant in place in the ground and act as our feet do to support us on the ground. They look like hair. The main job of roots is to take water and food from the soil. Then I will say I will drop potatoes into the pot.

Stems- The stem supports the leaves, branches and fruit of a plant. Stems can be thin or thick. Some twist and turn like vines and some stand up straight. The stem is the storage house for food. The food goes up the plant from the stem. Put celery into the pot.

Leaves- Leaves come in many different shapes and sizes. In all leaves there are tubes. The tubes carry water to other parts of the plant. Now I will add the cabbage to the pot. The cabbage has a great visual purpose as well because you can see the tubes in it.

Flowers- The flower on a plant play a significant part making a new plant. Some smell nice and some do not have a smell. They bear seeds and seeds produce baby plants. I would add cauliflower .into the pot. This is an edible example. I could use orchids but they are always eaten fresh.

Fruit- As a seed grows in a flower; it can swell into a fruit. It can have a soft shell or a hard shell. This is noticeable in an apple and a pineapple. Now I will add slices of apples to the pot.

Seeds- Seeds grow inside of the plant fruit or flower. Seeds have a hard coat to protect them. They are what new plants grow from. Now I will add some sesame seeds to the pot.

Now let the ingredients cook in a broth. This will take at least an hour to cook. A good idea is to have a pot already made but I think the students will enjoy smelling it. The broth will sway the flavor. I will use a vegetable broth. I just don't want it to taste like a meat while am discussing a plant. Now we can enjoy our own Stone Soup. As a portfolio paper they will draw a picture of the story and add some of the plant parts we had to their drawing.

Annotated /Bibliography

Clemens B. Jacqueline. (1998). Simple Gardening Fun. California. Teacher Created Material
Jacqueline makes gardening fun for children and takes the time to give meaningful activities.

Cronon William. (1991). Natures Metropolis- Chicago and the Great West. New York, New York. W.W. Norton Company
This book actually looks at pre environmental issues concerning major technological growth such as with lumber.

Garden- Encyclopedia Britannica. (2007).Encyclopedia Britannica Online. May 22, 2007. http://www.britannica.com/eb/article9365244
I found this to be a very good encyclopedia service that gives you information about any subject that you may need to research.

Pursell Caroll. (1995). The Machine in America A Social History of Technology. Maryland. John Hopkins Press.
This book discusses the impact of technology and how it influence people. The way people live is largely based on the technological devices they could get and have. Pursell has a way with looking at how agriculture was developed and the mechanization of farms. The journey of the small tool from Europe.

Rodgers Everett M. (1995). Diffusion of Innovation. New York. Simon and Schissler.
He developed the diffusion theory. He studied agriculture and grew up on a farm. Later in his life he became interested in value based management.

Shealey Eames Marcia. (1994). Sowing the Seeds of Success: How to Grow and Sustain a Kid Garden Project in Your Community. Cornell University
This book tells about the important things needed to do a garden. It tells how to use the environment and getting involvement from the community at large.

Children Story book

Bruce Lois. (1999) Grow Flower Grow. New York. Scholastic Inc.

This book goes through the seasons of a flower. The character in the story waits out every month of the year to watch a flower grow.

Bruchac Joseph ,Caduto Michael J.(1989). Keepers of the Earth. Colorado . Truchum Inc.
This book has stories related to Native American folktale and environmental activities related to the folktales.

Ehlert Lois. (1987). Growing Vegetable Soup. Florida. Harcourt Inc.
This colorfully illustrated book talks about growing vegetables to make a soup.

Lillie Patricia. (1993). When This Box is Full. New York. William Morrow Company.
The author has a box that is filled with the months of the year emphasis is on the cyclic nature of the months.

Marzallo Jean. (1996). I'm a Seed. New York. Scholastic.
A perfect book to explain what a seed does. It has illustrations to show what it becomes.

Resources

Acorn Naturalist
P.O. Box 2423
Tristen, Ca. 92781-2423
800-422-8866
Web site: www.acorn-group.com
You can receive resources for science and environmental education. They have interpretive tool toys and books on nature.

American Horticultural Society
7931 East Boulevard Drive
Alexandria, Va. 22308-1300
703-768-5700 or 800-777-7931
Web site: www.ahs.org
This society was founded in 1922. They belief they want people to become responsible and successful gardeners. They also advance the art of science and horticulture. It has a yearly youth gardening symposium which is a national forum for youth gardens and garden education.

Bidwell Training Center
1650 Metropolitan Street
Pittsburgh, Pa. 15233
412 –322-1773
Web site: www.bidwell-training.org/
They have a horticulture certificate program. Teachers can observe and take classes.

Gardens for Growing People: Resources for Garden Based Education
P.O. Box 360
Pt. Reyes, Ca. 94956
415-663-9433
Web site: www.svn.net/growpep/
A resource to help with youth gardening projects. The site offers for sale child-sized tools, books, habitats garden kits seeds and DVDs.

Grow Pittsburgh
400 N. Lexington Street
Pittsburgh, Pa. 15208
412-473-2542
Web site: www.growpittsburgh.org
This is a program that helps with community gardening. It will also provide educational classes for students and teachers

Ladybird Johnson Wildflower Center
4801 LaCrosse Avenue
Austin, Texas 78739
512-292-4100
Web site: www.wildflower.org
This center was founded in 1982 to educate people about the environmental necessity and economic values of native plants. A children's link is available.

National Audubon Society
700 Broadway
New York, NY 10003
212-979-3000
Web site: www.audubon.org
This society was founded in 1905. There mission is to restore and conserve natural ecosystems for the benefit of biological diversity and people. There is a section on the web site for children and educators.

National Gardening Association
1100 Dorset Street
South Burlington, Vt. 05403
Web site: www.nationalgardening.com and www.kidsgardening.com
The primary focus of this association is to teach children how to garden and how gardening enhances education. Horticultural expertise and networking opportunities for educators are available. They have a curriculum and support education. They were founded in 1972. A youth gardening grants program.

Project Wild National Office
5555 Morningside Drive Suite 212
Houston, Texas 77005

713-520-1936
Web site: www.projectwild.org
They provide instructional material designed to support state and national standards k-12. Numerous materials and guide books.

Appendices-1
Here you will find the KWL chart, Pa. Standards and a permission slip. Rodgers Diffusion Curve can be accessed through the web link in the paper.

K Know **What you already know?**	
W Want **What you want to know?**	
L Learned **What you learned?**	

Appendices-2

Standards

Family-Community-School Partnerships

1.1 Collaborating with the community.

d. Use community resources for improving curriculum and instruction.

Reading
1.2 Reading Critically in all areas.

a. Determine important ideas and messages in informational texts.

Science

3.1 Unifying a theme.
a. Identify and describe what parts make up a whole.
d. Explore patterns that regularly occur in nature.

3.2 Inquiry and Design

a. Build an introductory vocabulary of scientific terms.

3.3 Biological Sciences

e. Describe basic needs of plants and animals.
g. Understand that living things are made up of parts that have specific functions.

3.6 Technology Education

a. Identify examples of technology and how these impact various aspects daily life.
g. Experiment with simple machines.
h. Identify how materials arrive at a work site.

3.7 Technological Devices

a. Sort tools by their function.
b. Select appropriate tools and material to solve a simple problem.

4.6 Environment and Ecology

b. To begin to understand the concept of cycles.

8.1 History

a. Understand chronological thinking through weeks months and year.
b. Begin to develop an understanding of historical interpretation.

Appendices-3

Permission Slip

My son/daughter _____ has permission to participate in (Name of activity) _____ on (Date of Activity) _____. Date of his/her last tetanus shot _____. He/She is allergic to _____ and I have noted his/her physical limitations on the back of this form. During the activity, I may be reached at: Address _____ Phone _____ If I cannot be reached in the event of an emergency, the following person is authorized to act in my behalf:

Name and Address
_____
Relation to participant _____ Phone_____
Additional Remarks _____

_____ _____
(Parent's Signature) (Date)

By signing this form, I declare that I am the legal parent/guardian of the minor child listed above and authorized to grant such permission.