Background information for the teacher continued

Stems -- The functions of the stem is to 1) hold up the plant and 2) to transport water and nutrients absorbed from the roots up to the rest of the plant and to transport energy containing compounds made in the leaves down to the rest of the plant. To perform the function of holding up the plant the stem must be strong enough to support the weight of all the branches and leaves that are above the stem. The thickness and rigidity of the stem will depend on the size of the plant.

To perform the function of transporting water, nutrient, and energy containing compounds, the stem must have veins (tubes) that run up and down the inside of the stem (you might want to ask the students if they have ever noticed the string-like veins in celery, which is a stem that we eat).

Leaves -- The function of the leaves is to capture energy from the sun and store this energy in carbon-based molecules through the process of photosynthesis. The students will learn more about photosynthesis in the next lesson. The leaves are thick and wide in order to have maximum surface area facing the sun.

Flowers -- The function of the flower is to enable the plant to produce seeds, the flower often has large petals that lead to the center to enable insects that germinate the flowers to get in.

Fruit -- The function of the fruit is to store seeds and to give nourishment to the seeds. The seeds are most often stored deep within the fruit to protect them. (Strawberries are an exception since the seeds are on the outside.) The skin of the fruit serves as the protector and the "fleshy" part of the fruit serves as storage for nutrients for the seeds.

Seeds -- The function of the seeds is to enable the plant to reproduce. Different plants have different size, shape and weight seeds. Some plants have small light seeds that are easy to distribute since they can blow in the wind. However, other plants have large seeds (like peaches) that are more challenging to disperse and are usually taken from place to place by people or animals.
Background information for the teacher

Photosynthesis

Animals take food into their bodies by eating, whereas green plants are able to make their own food through the process of photosynthesis. Plants trap energy in the form of light (solar energy). Then they change it into chemical energy held in the chloroplasts. This process is called photosynthesis. The name is derived from the Greek words meaning ‘light’ and ‘to put together’. Carbon, hydrogen, and oxygen atoms are put together to make sugar (food substances), using the energy of light.

The carbon comes from carbon dioxide gas in the air. The hydrogen and oxygen come from water. The water is taken up from the soil by the plant’s roots. The light energy is trapped by a special chemical called chlorophyll. Chlorophyll is green and gives green plants their color. Chlorophyll is made and stored within structures called chloroplasts. Chloroplasts are found in most cells of the leaves and other green parts. The gas oxygen is left over at the end of photosynthesis and goes into the air.

Simply: carbon dioxide + water + energy = sugar + oxygen.

Note: Only plants that contain chlorophyll can make food by photosynthesis. Non-green plants, such as mushrooms and fungi, live on dead plant and animal matter.

Interrelationship of plant and animal life: The life cycle

All of the energy in food comes from the sun. Plants capture the sun’s energy and convert it into chemical energy, which is then stored in the plant. We eat these plants, and we also eat the animals that eat these plants. This process is called the “life cycle”. By eating plants we are able to obtain and use the energy they produced through photosynthesis. The energy in food is stored as carbohydrates, fats and proteins. These substances are used by our bodies as fuel, similar to the way that plants “fuel” a forest fire.
Photosynthesis

The Process of energy transformation

Solar Energy (Light)

Oxygen is released

GREEN LEAF

(CHLOROPLAST)

Solar energy is converted into chemical energy in the chloroplast

then changed into:

Glucose
The plant's food

= the flow of energy from the sun into the plant's food

The Process of energy transformation

Solar Energy (Light)

CO₂

CO₂

H₂O

H₂O

O₂

The combination of 6 carbon dioxide molecules (CO₂) and 6 water molecules (H₂O) produces 1 molecule of sugar (glucose) (C₆H₁₂O₆) and 6 molecules of oxygen (O₂) that get released into the air.

6 CO₂ + 6 H₂O → C₆H₁₂O₆ + 6 O₂
Module 1, Lesson 3: Plants making food from the sun

Photosynthesis

**Photosynthesis Diagram**

- **Carbon Dioxide (CO₂)**
- **Water (H₂O)**
- **Food (glucose)**
- **Chloroplast**
- **Energy**
- **Oxygen (O₂)**

**Equation:**

\[ 6CO₂ + 6H₂O + Energy → C₆H₁₂O₆ + 6O₂ \]
Photosynthesis

Green plants can make their own food by using the process of photosynthesis. Photosynthesis happens in a part of the leaf called the chloroplast. There are millions of chloroplasts in each leaf! The chloroplasts contain a special chemical called chlorophyll. Chlorophyll is green and gives green plants their color.

Chlorophyll is very special because it can trap the light energy that plant leaves get from the sun.

Here is how photosynthesis works. The chloroplasts within the leaves take in carbon dioxide (CO₂) from the air, water (H₂O) from the soil (that travels from the roots to the stems to the leaves), and light* energy from the sun. The CO₂, H₂O, and light energy are put together** to make glucose. Glucose is a type of sugar. It is made of carbon (C), hydrogen (H), and oxygen (O) and has lots of chemical energy stored within it. When the CO₂ and H₂O combine to make glucose there is extra oxygen left over. This extra oxygen is released as O₂ into the air. This is the oxygen that we breathe.

Photosynthesis is very important for many reasons. The energy the plants capture from the sun is used by the plants to help them grow. Also, animals depend on this energy as their source of energy too. This is because animals eat plants or eat other animals that ate plants. In addition, plants and animals share another important relationship. Plants take in CO₂ from the air and release O₂ back into the air. Animals (including humans) take in O₂ and release CO₂. Therefore, plants and animals depend on each other.

Photosynthesis Homework:

1. Photosynthesis is the process of converting light energy into ____________ energy.

2. Photosynthesis is made possible by the green pigment called ____________.

3. To perform photosynthesis plants need ____________ from the soil, ____________ from the sun, and ____________ from the air.

4. The products of photosynthesis are ____________ and ____________.

5. Light energy for photosynthesis usually comes from the ____________.

6. The part of the plant cell where photosynthesis takes place is called the ____________.

7. Glucose is a type of ____________. It is made of ____________, ____________, and ____________. It has lots of ____________ energy stored within it.

* Photo means "light"
** Synthesis means "put together"
photosynthesis

A process by which a plant produces its food using energy from sunlight, carbon dioxide from the air, and water from the soil.
How Do They Help Out?

Each part of a plant has a different function. Each is very important in order for the plant to grow healthy and strong.

Try to match the plant parts with their functions.

- **stem**: This part keeps the plant in the soil. It also collects moisture from the soil.
- **leaves**: This part helps the plant stand up. It carries moisture and food to all parts of the plant.
- **roots**: This part makes seeds so we can grow new plants.
- **flowers**: This part makes food for the plant from the sun's rays and carbon dioxide.
Flower pollen for bee

Leaf catches water for flower

Stem sends water to flower moisture from soil

Roots absorb the water

They absorb the water
The Bee and the *Brassica*: Interdependence

Bees and *Brassica* plants need each other in order to live. Each one takes something from the other and gives something in return. You might say that they have a real partnership.

Why does a flower need a bee? The main reason is so that the flower can make seeds. The *Brassica* flower holds both the male and the female parts of the plant. The male parts, the filament and anther, produce the pollen, which looks like fine yellow powder. Pollen must travel to the female parts, the pistil and stigma, of another flower on a different *Brassica* plant. Unless the pollen from one plant can reach another plant, no new seeds will form. Then, no new *Brassica* seedlings will grow.
So it is very important that the pollen get from one plant to another. But the problem is that the pollen is sticky and cannot easily travel in the wind. How can the pollen travel? That’s where the worker bee comes in. With its bright yellow color and sweet perfume, the flower lures the bee and offers not only one but two kinds of food: nectar and pollen.

The bee’s body is covered with feathery hairs. As the bee dips her head into the flower to sip the sweet nectar deep inside the blossom, her hairy body rubs against the anthers holding the pollen. Her body traps some of it. When the bee flies off to the next flower, some of the pollen on her body sticks to the stigma there.

Now the bee has done her job. The bee has collected two kinds of food from the flower. At the same time, it has carried pollen from one flower to another. New seeds will form. Soon new flowers will bloom.
Plant Parts
Can you fill in the blanks with the correct words?

stem  flower  leaf  roots

flower

leaf

stem

root

Name: ________________________________

Name: ________________________________
Flower Facts

Why Do Plants Have Flowers?
The goal of every plant and animal is the same: To create the next generation. The way a plant makes another generation of its species is by making seeds. Flowers are the tools that plants use to make their seeds.

A seed contains all the information needed to make a new plant. This information is stored as a code in tiny genes within the seed. This genetic code forces the seed to grow into a plant like its parents. Although the new plant will be the same species as its parents, it will not be exactly the same as either of them. Its genetic code is a new mix of genes, half from each parent.

Only flowers from the same species of plant can produce seeds. A flower provides a place to combine the genetic code from a male and a female into a single seed. The combination happens when the pollen, from the male parts of one flower, connects with an ovule (egg) from the female parts of another flower. This is called pollination.

Here are the basic parts of a flower:

But how does the pollen from one flower get to the ovules of another flower? Unlike animals, plants can’t exactly go out hunting for a mate! Instead of working very hard at attracting each other, plants make flowers to attract pollinators to do the work of mating for them.

Pollinators can be bees, flies, beetles, moths, hummingbirds, bats and other animals that visit flowers. They gladly travel from flower to flower to gather the nectar and pollen to feed themselves or their young. The plants make the nectar and pollen just to attract the pollinators. Flowers are like big signs that advertise to pollinators: Eat Here!
When a pollinator goes into a flower to collect nectar or pollen, tiny grains of pollen from the **anthers** of the flower (the male parts) stick to their bodies. When the pollinator visits another flower of the same species, some of this pollen brushes onto the sticky **stigma**. The stigma is the receiving end of the **pistil** (the female part of a flower), where the ovules (eggs) in the **ovary** wait to be fertilized by the pollen. The pollen travels from the stigma, down the style, to the ovary. When an ovule is fertilized, the genes from the pollen combine with the genes of the ovule and a seed is made!

**Pollination**

1. The pollinator receives pollen from the stamen of the first flower.
2. And deposits it on the stigma of the next flower.
3. The pollen moves down the style to join with the ovules in the ovary.

This is how it happens:

The job of a flower is to help its pollinator put pollen exactly in the right place at the right time to make a seed. When a plant's flower succeeds at this, the plant gets to pass the secret for this success to the next generation, through the genetic code in its seeds! When a plant fails to grow up and make seeds, its genetic code does not get passed on. It becomes a loser in the game of life.

The environment is constantly testing each plant. Competition for sunlight, water, nutrients and space is fierce. **Herbivores** are hungry and plants are their breakfast, lunch and dinner! Only the strongest individuals survive long enough to reproduce. These survivors keep making seeds, letting the environment select the winners and losers. Through this selection process plants have **evolved** (developed) to survive life in every habitat on our planet. This **evolution** has filled even the harshest habitats with life, including vernal pools.

Although the pollination of a flower may appear to happen by accident, plants and pollinators have been practicing for millions of years to make sure that this "accident" happens. Often a plant and pollinator co-evolve (evolve together), adapting to changes in each other to improve their own survival. A plant species may depend on a single species of pollinator to make its seeds. Likewise, many pollinators rely on one plant species to provide all the food for their young. The complex relationship between solitary bees and certain vernal pools plants is a good example of this co-evolution.
Flower Parts & Pollination Worksheet

Fill in the boxes with the name of the flower part from the words in the box below. Color the petals red, the sepals green, and the pollen yellow.

How Pollination Works

Fill in the blanks.

1. For plants to make seeds, the pollen from the _anther_ of one flower needs to fertilize the ovule of another flower.

2. The seeds are produced in the flower’s _ovary_, at the base of the pistil.

3. A variety of critters collect pollen and nectar to feed themselves and their young. These critters also carry pollen from one flower to another and are called _pollinators_.

4. Name at least four critters that might be pollinators:

   - bees
   - flies
   - moths
   - beetles
make cute
shy down
to the sky were it
finally, the strong down
to the last flower
flower on the pollin
they fly to another
body against the other
the flower they rub those
first, the pollinators come
Use www.worldfactbook.com search engine to answer the following questions

**Country:** Uganda

**Life expectancy:** Male 43.73 yrs  Female 46.83 yrs

**Highways:** Paved 180.9 km  Unpaved 25,191 km

**Number of tractors:**

**Arable land:** 25.88 %

**The climate of this country:**
- **Temperature range:** Low __not much__ High __very much__
- **Rainfall (determine inches or mm):** Low __very much__ High __not much__

**Terrain- types of land and soil:** mostly plateau with rim of mountains

**Agricultural products – what people eat and grow:** coffee, tea, cotton, tobacco, cassava, wheat

**Total population** 26,404,543 **year** 2004

**Labor force by occupation:**
- **Year 1994** Agricultural 82 %
- **Year 1999** Services 13 %
- **Year 1999** Industry 5 %

**Literacy rate**
- **Male** 79.5 %
- **Female** 60.4 %

(Amoako/Narshkin 2005)
**I Am**

*Instructions:* Mark line closest to the word that best describes you.

- Fast → Slow
- Thinker → Doer
- Morning Person → Night Person
- Listener → Talker
- Leader → Follower
- Indoor Person → Outdoor Person

**I Prefer:**

*Instructions:* Mark line closest to the word that best describes you.

- Adventure Movie → Comedy
- Ice Cream → Cake
- Airplanes → Boats
- Sports Car → Luxury Car
- Beach → Mountains
- Dogs → Cats
Name: Tyler Sodder

Use www.worldfactbook.com search engine to answer the following questions

Ghana

Life expectancy: Male 55.36 yrs Female 51.22 yrs
Highways paved 11,665 km Unpaved 27,994 km
Number of tractors: 0
Arable land: 16.26%

The climate of this country:
Temperature range:
Low 0 High 0
Rainfall (determine inches or mm):
Low 0 High 0

Terrain- types of land and soil: mostly low with dissected plates 50th-80th-century geos

Agricultural products – what people eat and grow: cocoyrie
toffee cassava, peanut

Total population 20774, year 2004

Labor force by occupation:
Year 1999 Agricultural 60%
Year 1999 Services 25%
Year 1999 Industry 15%

Literacy rate
Male 82.7 Female 67.1 year 2003
(Amsaico/Narshkin 2005)
## Name

### How I Respond to Conflicts

Fill in the appropriate circle for things you always, sometimes, or never do.

When there's a conflict, I try to:

<table>
<thead>
<tr>
<th></th>
<th>Always</th>
<th>Sometimes</th>
<th>Never</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. hit the other person</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. run away</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. get help from another kid</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. talk it out</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. ignore it</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. understand the other point of view</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. make a joke of it</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. get help from a grown-up</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. make the other kid apologize</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. apologize myself</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. find out what the problem is</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. listen to the other kid</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13. tell the kid to leave me alone</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14. say swear words</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15. get friends to gang up on the other kid</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*From Creative Conflict Resolution, copyright © 1984 William J. Kreidler, published by Scott, Foresman and Company.*
Name: Tyler Saladier

Use www.worldfactbook.com search engine to answer the following questions

UNITED STATES OF AMERICA

Life expectancy: Male 79.163 yrs Female 80.36 yrs

Highways paved 4,142,395 km Unpaved 2,257,902 km

Number of tractors: ________

Arable land: 19.13%

The climate of this country:
Temperature range:
Low _______ High _______

Rainfall (determine inches or mm):
Low _______ High _______

Terrain - types of land and soil: Rugged mountains and broad river valleys

Agricultural products - what people eat and grow: Wheat, corn, other grains, fruits, vegetables, cotton, beef, pork, forest products

Total population 293,027,514 year 2004 est.

Labor force by occupation:

Year 2004 Agricultural 0.7% Services 16.5% Industry 88.8%

Literacy rate Male 97% Female 97% year 1999

(Amoako/Narishkin 2005)
Chapter 8. Teambuilding

My Favorites!

Sport to Play: __________ Football
Sport to Watch: __________ Football
Hobby: __________ Playing sports
Holiday: __________ My Birthday
Place to Be: __________ Mall
Time of the Day: __________ 6:00
Season: __________ Summer
Flower: __________ Orchid
Tree: __________ Maple
Song: __________ Go sit down
Group: __________
Book: __________ Longest Yard
Movie: __________ Every Body Hates Chris
TV Program: __________

School Subject: __________ Math
Color to Wear: __________ Red
Type of Clothing: __________ Guapo
Color: __________ Red
Person to Visit: __________ Ashley Lezlie
Dream Car: __________ Crystler
Dream Career: __________
Dream Vacation: __________ New England
Dream Future: __________
Food: __________ Spaghetti
Drink: __________ Spit
Candy Bar: __________ Snicker
Author: __________ Sharon Flake
Animal: __________ L'an

Spencer Kagan: Cooperative Learning ©
Publisher: Resources for Teachers, Inc. • 1(800) Wee Co-op
The United Nations

Name: Tyler Saddler

In what year was the UN established? 24 October 1945

How many countries are members? 191 countries

If the United Nations is not a world government, what is it? Or what do they do? To help resolve international conflicts and policies, affecting all of us.

Where is the United Nations building? New York

What are the six main organs of the UN? The Security Council, General Assembly, Economic and Social Council, Trusteeship Council, Secretariat, International Court of Justice

What is the General Assembly? The parliament of the nation
When peace is threatened the pick 1 of 5 countries, China, France, Russian Federation, the United Kingdom and U.S. to go and protect them.

The Economic and social council.

This is when they talk about social ideas with different commission on human rights.

Trusteeship council.

This provided international supervision for 11 trust territories administered by seven member states and ensure that adequate steps were taken to prepare the territories.
Tyler Selleck

The International Court of Justice

As so known as the world court it has 15 judges were you can here the opinion on your countries having Security concils.

The Secretariat

These are people that carry out the work of the U.N. order it consist of 7500 people under budget.
In Ghana people live 1, 68 more year than they may have many more or more than they may have. Because they may have more they have to plant more things they are also letter applied. Better than in Uganda they are more than in Ghana.