Green Gardening Lesson

Concept
Green gardening protects water quality.

Objective - Students will:
1) know and practice three rules of green gardening:
   A. Fertilize with compost (students will learn to make compost);
   B. Identify the bugs in the garden (beneficials and pests) and;
   C. Pull weeds instead of using chemicals.

Time
45 minutes

Materials Provided at the Green Classroom
- "Good Bugs" "Bad Bugs" posters
- Texas Bug Book
- Microscope viewer for every pair of students
- Bug collection box
- Gardening gloves for each student
- Gardening tools
- Homework: "Outsmart those Pests" and "Crazy about Compost" fun sheets
- Take Home: "Beneficial Insects" fact sheets

Materials in this Book (for reference only)
- "TNRCC Environmental Bulletin: Mulching and Composting"
- "Beneficial Insects" fact sheet
- "Outsmart those pests" and "Crazy about Compost" fun sheets

Materials for students to bring
- Uncooked plant waste from the kitchen and yard

Preparation
1. Encourage students to bring composting ingredients from home.
2. A Green Classroom teacher will set up materials and meet you at the gardens at 9:30 a.m. to lead this lesson.

LESSON: Green Gardening

REVIEW GREEN CLASSROOM RULES:

1. Stay on the sidewalks and pathways to avoid stepping on plants.
2. Only use tools and materials given to you.
3. Use tools and materials appropriately.
4. There is one bathroom inside. If you need to use the restroom, excuse yourself and go. There will be no "bathroom break".

Introduction

Ask students the meaning of Green Gardening. Explain the answer. ("Green" means environmentally friendly.) Tell students they will practice Green Gardening in this lesson.

Procedure

1. State Three Rules of Green Gardening.

- COMPOST FOR FERTILIZER.
- IDENTIFY GARDEN BUGS.
- PULL WEEDS AND MULCH INSTEAD OF USING CHEMICALS.

2. Composting for Fertilizer

(Present this activity at the compost pile located in the back of the Green Classroom.)

- Explain:

"Garden plants like vegetables and flowers that do not grow in Austin naturally need fertilizer to grow well in our dry Austin soil. However, fertilizer in our creeks and river is one of our biggest pollution problems."

- Green Gardening Solution:

"We can compost at home to make our own fertilizer. By making your own compost, you are imitating nature by recycling plants back into dirt. Compost dirt is a good fertilizer because it helps plants grow and stay healthy and is not full of chemicals that can easily dissolve and wash into the water. Not only is composting good for the water, it also saves money you might spend on fertilizer. Compost can also be bought at a garden center."

- Teach Compost Ingredients and Proportions:
  1) 3 parts brown plant waste
  2) 1 part green plant waste
  3) A little bit of dirt
  4) Enough water to keep damp
  5) NO MEAT, DAIRY, GREASY FOOD, SCAT OR BONES
- Define the Ingredients :
  1) Brown plant waste has been dead a long time, e.g. leaves, wood, sawdust.
  2) Green plant waste still has some life in it, so it has color and smell, e.g. banana peels, lettuce, carrot tops, fresh cut grass, just pulled weeds, etc. Show examples from the compost the students brought from home.
- Estimate proportions:

Three measures of brown to one measure of green is put in a compost pile. Use a bucket of green ingredients and discuss how many buckets of brown ingredients will be needed. Allow the students to add the correct ratio of green and brown ingredients to a compost pile. Sprinkle a little dirt and water. Mix the compost pile (stage one) using pitchforks and shovels.

- The plant waste from the activities in the garden should be composted by the students.
- Prepare designated beds with finished (stage 3) compost.

3. Plant a Seed

Give each student a 2 inch planter and a seed. Tell them to fill the cup with finished compost (stage 3). Plant a seed near the top of the soil. Students should take their plant home, place it in a sunny area and water every other day. Once the seed has sprouted and begins to grow into a sturdy plant, transplant to the garden or a large pot. Be sure to add more compost and continue watering until the plant is established.

4. Weeding

- Explain the problem:

"Many people spray weed killer regularly on their lawn to prevent weeds. The problem with this practice is that our scientists are finding trace amounts of weed killer in the creeks and river. It's even been found at Barton Springs."

- Explain the Green Gardening solution:

"Weeds can be pulled by hand instead of using weed killer. Garden gloves to protect the hands and a weeding tool are required because the weed must be pulled out by the root to get rid of it permanently. Mulch areas that have been weeded. Compost the weeds (without seeds) to recycle and make something good for the garden."

- Give each student a pair of gardening gloves and a weeding tool. Set out an empty bucket to collect weeds for the compost. Weed the garden in designated areas only.

5. Garden Bug Identification

- Explain the problem:

"Many people spray pesticides regularly on their lawn and garden to prevent bugs from eating their plants. The problem with this practice is that trace amounts of some types of pesticides are showing up in our creeks and river. Also, the bugs that are good for the garden are also killed along with any bad bugs. Sometimes this will make the garden worse in the long run because there are no pollinators to make the flowers produce fruit and vegetables, and there are no predators to eat bad bugs."

- Explain the Green Gardening solution:

"IDENTIFY GARDEN BUGS. Some examples of good bugs are: ladybugs (eat aphids), bees (pollinate), wasps (kill some kinds of catapillars) , preying mantis. Lizards, birds, and spiders are good too, although not classified as bugs! Some examples of bad bugs you can find in this garden are: snails, pillbugs and grubs.

SOLUTIONS for bad bugs that will not not harm the water:

⇨If it is eating the garden, it is probably good for decomposing the compost pile. The solution is to move the bad bug from the garden to the compost pile.

⇨Another option is to leave the bad bug in the garden if it is not causing large destruction, and especially if it is a bug that will metamorphisize into a good bug, e.g. caterpillars (butterflies) and grubs (beetles). A healthy garden needs a balance of good and bad bugs.

⇨The last option is to kill the bad bug if there is not a safe place for it in the garden or compost, or it is causing large amounts of destruction. For large amounts of destruction a chemical spray might have to be used. Choose the least toxic product when this is required.

⇨If it is a good bug, leave it in the garden.

⇨Explain some natural ways to treat bad bugs: pillbugs are attracted to grapefruit rinds and beer; nematodes can be introduced to kill grubs; insect netting can be used as a physical barrier."

- Give each pair of students a magnifier and allow them to go to different areas of the garden to find bugs.
- Help students check the bugs they found on the "Good Bugs" "Bad Bugs" posters. Evaluate the health of the garden by asking the following questions:

"Are there more good bugs than bad bugs?"

"Is there a balanced ecosystem."

If the answers to these questions are yes, then no action is required. If the answers are no, help students decide on a plan of action that will protect water quality and the garden.