



Chapter III. Activities and Lesson Plans

Indoor Projects, Lesson Plans and Activities

1. Edible Plant Parts: What's for Lunch? (1st Grade and Beyond)
2. Seed Balls (Preschool and Beyond)
3. Making Garden Labels (1st Grade and Up)
4. Homemade Garden Paper (1st Grade and Up)
5. Make your own Potting Soil (Preschool and Up)
6. Beyond Seed: Plant Propagation (1st Grade and Beyond)
7. The Local Food Pyramid (5th Grade and Beyond)

Other Indoor Projects: *Soil Milkshakes, Indoor Seed Starts, Origami Newspaper Pots,*

Outdoor Lesson Plans and Activities:

1. Renewable and Non-Renewable Resources Part I (4th Grade & Beyond)
2. Renewable and Non-Renewable Resources Part II (4th Grade & Beyond)
3. Living vs. Non-Living (Kinder and Beyond)
4. Soil Part I (1st Grade & Beyond)
5. Soil Part II (4th Grade & Beyond)
6. Soil Lasagna: Sheet Composting the Fall Garden (Kinder and Beyond)
7. Hula Hoops and Habitats (2nd Grade & Beyond)
8. Ladybug Release: Pests and Guests (Kindergarten and Beyond)
9. Building Your Own Compost Bin (4th Grade and Beyond)

Other Upcoming Lesson Plans:

- ~Biodiversity in the Garden (5th Grade and Beyond)
- ~Weather/ Rain Systems (3rd Grade and Beyond)
- ~Sensory Activities (Kindergarten)
- ~Seed Bingo (1st Grade and Beyond)

Possible Outdoor Garden Projects for Youth

1. Bean Teepee, Building Trellises
2. Making Seed Tape, Seed Paper
3. Build your own Birdhouse
5. Worm Compost Bin- see handout
7. Scarecrow Day
9. Designing Raised Beds ***see lesson plan
10. Manure Tea
12. Building a raised bed *** (raised bed options)

Garden Based Activities and Topics for K-5 Based on Colorado Model of Science Standards

Kindergarten:

- Sensory Garden (see theme garden) and Sensory Cards
- Identifying Living vs. Non-Living (Living vs. Non-Living)
- Trees

1st Grade:

- Soil (Making Homemade Potting Soil and Soil Part I and II)
- Plants (Beyond Seed: How Plants Propagate)
- Bulbs
- Decomposition and Soil (Soil Lasagna)
- Seed Exploration: How Seeds Travel, Seed Bingo and (Seed Balls)

2nd Grade:

- Bugs, Butterflies, Birds and Pollinators (see theme gardens) Ladybug Release
- Habitats (Habitats: A Round View)

3rd Grade:

- 3 Sisters Garden (see theme garden)
- Weather, Erosion, Recycling

4th Grade:

- Colorado History Garden (see theme garden)
- Decomposition: (Compost Bins; Soil Lasagna, Vermiculture)

5th Grade:

- Inter-relationships and Biodiversity
- Nutrition (Local Food Pyramid)
- Humans Affect on Environment; (Renewable vs. Non-Renewable)

Handouts:

1. Sowing Seeds in Containers
2. Weeding
3. Deadheading
4. Harvesting Worm Castings
5. Harvesting Lettuce
6. Tips for Transplanting
7. Manure: The Scoop on Poop
8. Making Manure Tea

ACTIVITY 1.1 Edible Plant Parts: “What’s for Lunch?”

Overview: Students will learn about the six parts of a plant, their functions and learn which parts of the plants we eat.

Lesson Background: Plants are made up of roots, stems, buds, leaves, flowers, fruits and seeds. When we eat our fruits and vegetables we are eating one or several parts of a plant. In this lesson, students will discover and identify plant parts by eating their lunch, observing what others are eating or viewing examples in the classroom.

Instructions: In Advance (Optional): If you choose to provide real examples either bring in examples of fruit or vegetables (see examples in the plant chart), ask students to bring in fruits and vegetables from home or take a trip to your school salad bar.

Day One/ Morning Lesson:

1. Start by reviewing the parts of a plant and review the purposes of each part. Use the plant parts diagram to review the parts.
2. Discuss the role of each of the plant parts. Why does a plant make seeds? How do the roots help the plant get water or food? Use the definitions provided in the plant part chart to describe the uses of each part.

Day Two/ Afternoon Lesson:

3. Using live examples, review some plants and the parts of the plants they came from. Beets and carrots with leaves in tack make for good examples to show roots and leaves. A pea or cucumber with seeds shows seeds and fruit. Broccoli is a good example for buds and flowers.
4. Handout Worksheet: What’s for Lunch?. Ask students to write down the fruits or vegetables they saw. Next, ask students to answer which part of the plant they were eating. Older students can give reasons for their conclusion. For example, tomatoes are fruit because they have the seeds inside. Beets are roots because they grow in the ground. Lettuce are leaves because they are green and looks like other plant leaves.

Extension: Ask students to make (or draw) their own salad or pizza using as many parts of the plant as possible.

Grade Levels: 1st through 5th Grade

Core Subjects: Life Science, Nutrition and Health,

Objective: Students will be able to identify 7 parts of the plant. Students will see discuss the role of various plant parts and the role of vegetables and fruits in our everyday health and diet.

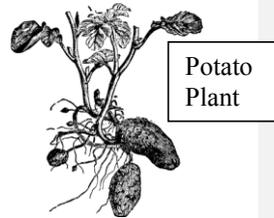
Materials: Plant Diagram, Plant Part Chart, Worksheet: What’s for Lunch?, and examples of fruits and vegetables.

Duration: 90 minutes (2 sessions of 45 minutes each). This can be done as a morning and afternoon lesson or over the course of 2 days.

Plant Part Chart:

PART	DESCRIPTION	EXAMPLES
Roots	Forms below ground, brings water and minerals to the plant, serves as food storage	Beets, Carrots, Radishes
Stem	Provides support for the buds and the leaves and gives the plants its form	Potatoes, Rhubarb
Bud	An underdeveloped shoot from which leaves or flowers grow. A flower bud includes a short stem with embryonic flower parts.	Broccoli, brussel sprouts, artichokes,
Leaf	The part of the plant involved in photosynthesis and transpiration. Leaves include: stoma, guard cells, epidermis, cuticles, veins, chlorophyll, and chloroplasts.	Parsley, lettuce, mint, onions, celery, chives,
Flower	The structure that contains the organs for sexual reproduction. The site where pollination occurs.	Borage, nasturtiums, calendula, violas, sage, lavender, squash flowers
Seed	Fertilized ovules grow and swell to form seeds after pollination has occurred. A seed contains an embryo, endosperm, and seed coat.	Shell peas, wheat products, coffee, oats,
Fruit	The enlarged ovary surrounding the newly developed seed is the true fruit of the plant. The fruit holds and protects the seeds.	Pumpkins, tomatoes, peaches, grapes, green beans

WORKSHEET: WHAT'S FOR LUNCH?



In the following diagram, list the fruits and vegetables you saw. Describe what they looked like and answer what part of the plant they could be.

What fruits or vegetables did you see?	What do I look like?	What part of the Plant am I?
Tomatoes	Red, Mushy, Seeds inside	Fruit
Lettuce	Green, Leafy	Leaves

Activity 1.2 Seed Balls

Overview: Students will learn about soil composition and seed saving by making seed balls with native clay, compost and seeds.

Lesson Background:

Seed balls are a method for distributing and storing seeds by encasing them in a mixture of clay and soil humus. Throughout history some native North American tribes used forms of seed balls.

Seed balls are simply scattered directly onto the ground, and not planted. They are useful for seeding dry, thin and compacted soils and for reclaiming derelict ground. This method takes a fraction of the time or cost of other methods to cover large areas and is also very applicable in small areas. Seed balls are also useful when planting small seeds with young children.

The clay and humus ball prevents the seeds from drying out in the sun, being eaten by predators like mice and birds or from blowing away. When sufficient rain permeates the clay, the seeds inside will sprout. They are protected within the ball and are provided with nutrients and beneficial soil microbes from the compost in the soil mixture. Seed balls are particularly useful in dry and arid areas where rainfall is highly unpredictable.

Instructions and Ingredients:

Step One: Prepare Ingredients

- a. Prepare clay by either sifting through a strainer or removing large chunks. Set aside 1¼ cups of clay.
- b. Prepare ¾ cups of dry organic compost. Remove any large chunks.
- c. Prepare ¼ cup of seeds. You can use various wildflower seeds, herbs, salad greens, or perennials. Use seeds that are companions and can be planted at the same depth. (Seeds that are lightly covered or planted about ¼ inch deep are optimal.)
- d. Set aside water in measuring cups or squirt bottles

Step Two: Mix Ingredients

- a. Mix Clay, Compost and Seeds in mixing bowl.



Grade Levels: All ages

Core Subjects: Life Science, Plant and Soil Science, Cultural History

Objectives: Students will learn about soil composition, the role of different soil components (clay and compost) and the history of seed saving.

Materials:

- Clay
- Compost
- Seeds
- Water and water bottle
- Mixing containers and measuring cups
- Tray or containers to dry and store seed balls

- b. Add just enough water to obtain the proper consistency so the mixture sticks and bonds together.

Step Three: Prepare Seed Balls

- a. Take a pinch of the finished mixture and roll (in the palm of your hand) into penny-sized round balls.

Step Four: Dry seeds balls in the sun for a day or two.

Step Five: You can store the seed balls for up to a year or more inside. Or broadcast dry seed balls directly onto soil surface. Water or wait for rain to allow seeds to germinate.

This recipe makes approximately 30-40 balls. Enjoy!

Notes and Instructions for Giving Seed Balls as a GIFT!

The seed balls are a mixture of local clay, compost, and local wildflower seeds. They could be useful for seeding dry, thin and compacted soils and for reclaiming derelict ground. The clay and humus ball prevents the seeds from the drying out in the sun, being eaten by predators like mice and birds, or from blowing away. Simply scatter the seed balls directly on the ground, wait for rain and enjoy!

Or

These seed balls are a mixture of local clay, compost, carrots, radishes, and salad greens. The clay and humus ball prevents the seeds from the drying out in the sun, being eaten by predators like mice and birds, or from blowing away. Place the seed balls on the surface or ¼ inch in prepared garden bed. Water and enjoy.

ACTIVITY 1.3 Handmade Garden Packets and Labels

Overview: Students will make their own plant seed packages or labels while learning various plant facts including nutrition, plant usage and history and planting guidelines.

Instructions:

You can make a label by using an old seed package or you can create your own label using personal drawings, pictures or cut out of the plant.

Information to Include on Label:

1. Name of Plant
2. Botanical Name
3. Days to Germinate or Days till Harvest or Bloom
4. Light Requirements if known (sun, shade, part sun/shade)
5. Planting Instruction/ Seed Depth
6. Nutritional Fact about Plants: (i.e. carrots are full of Vitamin E which improves your vision)
7. Fun fact about plant of your choice (i.e. tomatoes were first grown as decorative plant before we learned the fruit was edible).
8. Hand drawn picture or cut out picture from seed catalog, or download a picture from the internet

Grades: 3rd Grade and Beyond

Core Subjects: Art, Science, Nutrition or History

Materials:

- Old Seed Packets, Seed Catalogs, or Paper for Hand Drawn Art
- Wire Coat Hangers
- Laminating Paper

Preparing Wire and Laminating Sheet:

1. Cut wire hanger twice – around 7” to the right and left of center
2. Reshape hanger to create a fork shape
3. Cut plastic album pages into envelopes or prepare laminating paper
4. Slide the fork into album paper or laminating paper
5. Secure sides with tape to keep water or rain from getting in
6. Insert Seed or Plant Label into laminated paper and wire handle

Activity 1.4 Making Homemade Garden Paper

Overview: Through making their own paper students will learn the origin of paper, its history, folklore, and the use and origins. Students will add seeds to plant the paper in the ground.

Lesson Background: Paper is a mat held together by a fiber's roughness, and can be made from almost any fibrous material (cotton, hemp, or recycled paper).

History of Paper:

Ancient Egyptians invented the first substance like the paper we know today called Papyrus. Papyrus scrolls were made by taking slices of the inner part of the papyrus stem flattening it and then pouring it into a hard, thin sheet. The word "paper" comes from the word "papyrus."

Papermaking was invented in China in the second century A. D. The paper was made one sheet at a time until 1798. The process begins when trees (grown specifically for papermaking) are harvested and transported to a paper mill. At the mill, machines strip away the bark and shred the logs into millions of chips. The chips travel to gigantic pulp cookers where chemicals and steam are added. The mixture is heated and pressurized and breaking the chips into even smaller pieces. Water is added and the final product which turns the chips into a pulp. After cleaning and screening the pulp, dyes and pigments may be added. The paper is spread onto a wide screen. After the water drains, the paper remains and the paper is dried for its final stage.

INSTRUCTIONS:

1. Rip Paper into small pieces
2. Soak in Warm Water (you can skip this step and just add paper and warm water in blender)
3. Add mixture to blender until soupy (make sure there is no glue or glossy paper or it will clog the blender)
4. Start blender slowly at first, then speed up

Grade Levels: Elementary and above

Core Subjects: Science, Social Studies, Visual Arts and Language Arts

Objectives: Students will be able to identify the origin, use and history of paper. They will practice a method of recycling and reusing natural materials.

Materials:

- Lint
- Screen- window
- Rolling Pin
- Blender
- Recycled Paper
- Warm Water
- Wash tub, Large Bowls or sink
- Table for drying
- Absorbent towels
- Optional- seeds, lint, thread, flower petals, leaves*
- Add thread after mixture is blended. If you want to use flower petals leaves or seeds, place them on the screen before pouring your mixture.

5. Lay a large towel, with a screen on top. (add flower petals, seeds and spread onto screen if using)
6. Add paper mixture, mush paper by hand, cover with another screen same size use rolling pin to evenly smooth out paper
7. Add absorbent towel to top.
8. Replace towels if wet, to aid drying and prevent molding paper.
9. Leave flat and let dry. Drying times varies. 3 hours to 3 days depending on mixture.

Notes about Types of Paper:

- Newspaper makes paper thinner and grey
- White computer paper makes it lighter but chunkier
- Tissue Paper makes the paper finer
- Glossy papers should be avoided if possible

Options for Types of Paper to Use

- Newspaper
- Computer Paper
- Magazines
- Egg Cartons
- Old Cards
- Toilet Paper
- Non-waxed boxes (pre-soak in warm water)
- Office Paper
- Tissue Paper
- Napkins
- Construction Paper

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Resources:

Pioneer Thinking: A Refreshingly New Perspective
<http://www.pioneerthinking.com/makingpaper.html>

Classroom Discussion before and during Paper Making:

Recycling and Reusing Materials
 History of Paper

Leave Participants with Instructions on How to Plant Seed Cards

- Let paper dry completely.
- Cover with ¼ inch to 1 inch of soil (depending on seed size)
- Water daily or keep moist until seeds sprout.
- Include names of plant seeds used.

ACTIVITY 1.5 Making your own Potting Soil for Seedlings, Houseplants and More

Overview: Students will make potting soil while learning about soil composition and plant nutrition.

Lesson Background: Making potting soil costs less than buying commercial potting mixes from the store and allows you to make a mix to fit your plants different needs. It is fun and takes very little time.

Instructions:

Potting Soil for Established Plants:

Prepare Ingredients:

- 1-2 Parts Soil: Good Rich Garden Soil or Topsoil
- 1 Part Organic Material or a mix of: Peat Moss, Coconut Coir Fiber, or Leaf Mold
- 1 Part Drainage Material: Sand (not beach sand), Vermiculite, Perlite, or Rock Wool

Optional additions are screened compost, greensand, rock phosphate, azomite, earthworm castings, or dry organic fertilizer to add nutrients to new transplants.

1. Mix Together 1 part each of soil, organic material, and one part drainage material.
2. Moisten with warm water, but not too soggy.
3. Fill your pots with your fresh new soil.
4. Begin Planting

Making Soil for Sowing Seeds

Follow the steps from above. But instead of using garden soil or topsoil, use 1 part organic material, 1 part compost or leaf mold, and 1 part drainage material. For a soilless mix, use only drainage material and organic material since many young seeds prefer to germinate in a soilless potting mix. The soil causes more dampening off and molding and can carry more bugs that may be harmful to young seeds. Soilless mixtures are light in texture and weight and make it easy for young seeds to germinate and tender roots to take hold.

Core Subjects: Life Science

Grade Levels: Pre K and Beyond

Objectives: Students will work with measurements, and discuss soil composition and plant nutrients.

Duration: 20 minutes

Materials:

- 4 containers or large pots for mixing soil
- Measuring cups or large plastic yogurt cups
- Organic material (see examples)
- Drainage material (see examples)
- Garden or Topsoil
- Optional- use a sifter to remove large pieces (twigs, rocks and other debris that may be in the soil or compost)

ACTIVITY 1.6 Beyond Seed: Plant Propagation for Houseplants or Fruits or Vegetables

Overview: This lesson discusses the parts of the plant and the various methods of propagation. This lesson can be done with great detail and explanation or modified to work with younger grade levels.

Lesson Background: Plants propagate using several methods and through different plant parts. Some of these methods of propagation happen naturally and others require intervention. The various methods and instructions are discussed in greater detail below.

Fruits and vegetables can be used in many forms of propagation. Beets, Potatoes, Sweet Potatoes, Carrots, Avocado Pits, Citrus Seeds, and Onions can all be used. This modification to the lesson will provide a lot of intrigue, humor and interesting results!

Preparation: Obtain plants and supplies. Plants using root propagation should be rooted in water approximately one week before lesson plan. Place plants out of direct sun during root propagation.

Day of Lesson: Use up to 5 workstations and label stations by type of propagation.
Prepare Soil Using *Lesson Plan: Making Homemade Potting Soil*

Examples of Plants for each Propagation Method: Stems or Root Cutting:

Houseplants: Several Cacti and Succulents, Impatiens, Chrysanthemum, Geranium, Wandering Jew, Swedish Ivy,
Veggies: Potatoes, Sweet Potatoes, Radishes, Beets and Carrots.

Division: Pothos or Philodendrons, Airplane Plants, Aloes

Leaf Cutting: Snake Plant, Jade, Begonia, African Violet

Plantlets: Aloe, Spider or Airplane Plant, Piggyback Plant

Seeds: Veggies: Avocado Pits, Citrus Seed

Instructions:

1. Discuss the different parts of the plant using live plants and/or a plant diagram.
2. Set up 5 stations or tables: labeled: Stems and Roots, Leaves, Plantlets, Dividing and Seed Propagation. Place plants by the appropriate station.

Grade Levels: 1st Grade and Beyond (1st Grade Science Standard)

Duration: 60 minutes

Objective: Students will learn about plant parts and propagation. The lesson emphasizes that plants have many other methods of reproducing beyond seeds.

Materials:

- Potting Soil
- Plants for Propagation
- Signs for Plant Parts: Roots, Stems, Leaves, Plantlets, and Seeds
- Rooting Hormone
- Pots for New Plants

3. Move students through each station, explaining and modeling the different methods of plant propagation. Students can actively participate in any and all of the plant propagation techniques.

Separation and division is certainly one of the easiest and quickest ways to propagate many plants. Simply remove the mother plant from its container and separate or divide it by pulling or cutting it apart. Each division should have some roots attached. Repot the new plant.

Layering or Plantlets uses a mother plant and her babies and applies to plants with trailing stems or those like spider plants that produce baby plants. To propagate plants, prepare a small pot next to the mother plant and place a plantlet directly into prepared soil. The baby or plantlet will continue to use the mother plant for support until it is able to develop roots and new growth on its own. Once the roots have begun to develop or you see new growth on the plantlet, the baby is strong enough to be removed from its mother.

Leaf Cuttings: Only a few plants can reproduce by leaf cuttings. Break off a whole leaf, including its stalk, and insert the stalk into the rooting medium as above. Cover the container with clear plastic. One or more new plantlets will soon sprout at the base of the leaf. They can be potted individually when they are well rooted.

Stem Cuttings: Stem cuttings are the most popular method of plant propagation. The technique can be applied to all plants with noticeable stems. Select a healthy section of stem with at least three nodes (the bumps or rings where a leaf is or was attached) and cut it cleanly with a sharp knife just below the lowest node. Remove any flowers or flower buds as well as any leaves growing from the bottom node. A rooting hormone, available in the form of a powder, gel or liquid, can be applied to the cut section. The hormones (although not necessary) stimulate root growth. Over rooting or under rooting can cause a plant to be weak and may not survive transplant well. Leaves should not soak in water, only the stem. You can do this by removing all but the upper most leaves.

Cuttings can be rooted in water, but a rooting mix such as soilless growing media, with vermiculite, sand or perlite works best. Fill a pot or other container with mix and moisten it lightly.

Use a pencil to prepare a hole for the stem. Insert the cutting so that at least one or two nodes are covered with mix. Firm the mix then cover the container with a clear plastic bag to maintain high humidity.

Put the cutting in bright light, but not full sun, and supply warm temperatures. When the plant is well rooted and growing on its own (this can take from two weeks to several months) remove the plastic and treat the cutting like an adult plant. Cuttings of succulents and cacti should be allowed to heal over before

being potted. Don't cover succulents with plastic since high humidity can cause them to rot.

Seed: Almost all plants can be grown from seed, although houseplant seeds may be hard to find. Sprinkle the seeds over the surface of a moist growing medium and press lightly. Large seeds should be covered with a thin layer of potting mix. Cover the container with clear plastic or a sheet of glass and place it in a warm, brightly lit spot. When plantlets appear and have formed at least four true leaves, harden them off by gradually removing their protective covering, and pot them individually in small pots.

Extension:

After the students have propagated plants using each of the 5 methods. Have the students compare and contrast the various methods. Which method was the easiest to use? If one plant was propagated using multiple methods, which method produced the healthiest plants?

Activity 1.7 Local Food Pyramid

Overview: Students will explore their school garden and research/interview local producers (farmers, ranchers, value added producers) to find out if they can reach a balanced, local diet according to the food pyramid.

Lesson Background: The food pyramid is one example of how to eat a nutritionally balanced diet. The Food Guide Pyramid illustrates the research-based guide to daily food choices developed by the USDA. The Pyramid is an outline of what to eat each day. It's not a rigid prescription, but a general guide that lets you choose a healthful diet that's right for you. There are many different recommendations on how to lead a healthy, balanced life, which includes both eating well and exercising. Several scientists have discussed different opinions on how to live a healthy lifestyle outside of the USDA food pyramid. That said, the food pyramid has evolved with time and new research on nutrition. In 2005 USDA launched a new food guidance program called "My Pyramid", giving people a website that can help people calculate their personal healthy food choices based on their age and activity level.

Grade: 5th Grade & Beyond

Objectives: 1) To incorporate and create awareness around healthy nutrition in student's daily lives, 2) to understand a balanced, nutritional diet that follows the food pyramid, and 3) to develop an awareness around local food options.

Time: 3-4 class periods of 45 minutes

Materials: Food Journal Worksheet, Posters, Markers, Blank Food Pyramid Worksheet, List of local producers

The Food Guide Pyramid emphasizes foods from the five major food groups. At the base of the Pyramid are foods from grains. The second level includes two more groups of foods that come from plants—vegetables and fruits. The third level of the Food Guide Pyramid has two groups of foods that come mostly from animals. Each of these food groups provides some, but not all, of the nutrients you need. Foods in one group can't replace those in another. No one food group is more important than another—for good health you need them all. The small tip of the Pyramid shows fats, oils, and sweets. These are foods such as salad dressings and oils, cream, butter, margarine, soft drinks, candies, gelatins, jams and jellies. These foods provide calories, but few or no vitamins and minerals. ¹

Most important is that people eat REAL food, and shift the focus from nutrients to real food, meaning less processed and the majority of ingredients are easily identifiable. It is also important to consider eating foods from local, regional and small farmers. Investing in local foods is positive for people's health and also works to re-build our local economies. A local food based approach is becoming more and more necessary as the natural resources such as oil run out and

¹ http://www.fns.usda.gov/tn/Resources/cnak_2Youth.pdf

climate change impacts the price and availability of food.

Activity:

1. Ask students to keep a food journal for five days and encourage them to do it with their family. (see attached worksheet)
2. As students fill out their food journal ask them to identify the foods/meals they are eating within the food pyramid. They may have questions and have trouble differentiating which part of the food pyramid the foods they eat belong. Encourage them to ask family members, other students or you if they have questions.
3. After a week of creating awareness about the food pyramid and the foods people eat, students will create their own local food pyramid. Split students into group of 3-4 (even though this is a group project, all students will record their findings during this lesson). After a review of the food pyramid, give all students a blank copy of the food pyramid (see attached worksheet).
4. Take all groups outside to the school garden and ask students to record how many items from the food pyramid can be found in the garden.
5. Students should record their findings in the appropriate blank boxes of the food pyramid. Record what foods you found, where you found the food, and how it fits into the food pyramid. (either write the name of the food or draw a picture)
6. Most likely, the students only found items that belong in the vegetable and fruit groups. Tell the students to research local (within our local community or the greater Colorado area if needed) producers, call or write them to find out if they produce the other pieces of the food pyramid. Challenge the groups to see which group can find the most local products to fill in the other parts of the pyramid. Visit http://www.sustainableswcolorado.org/mesa_verde_guide for a list of producers in our region.
7. Once the students have found local sources for all parts of the food pyramid have each group create a local food pyramid group poster representing their findings with drawings and writings. (What foods did you find, where does that food come from, how many miles did it have to travel to be on your plate and how many servings of each group of food is recommended daily?) Display group posters in your classroom as a reminder of healthy eating habits and where the students can find healthy foods locally.
8. Discuss with students the importance of eating healthy, and diversifying their eating habits.

Extension:

1. At the beginning of the year talk with your students to see if there is interest in growing as many items as possible from the food pyramid in the 5th grade garden.
2. Plan a meal with your students with as many items from the food pyramid that you can find in the 5th grade garden plot.
3. For extra credit, students can visit a local farmers market and take notes of local farmers and products that fit into the food pyramid.

Name _____

Food Diary

Fill in below the foods you eat (breakfast, lunch, dinner and snacks—including what you drank) and the food group where it belongs.

Day 1

Breakfast:

Food _____

Food Group _____

Lunch:

Food _____

Food Group _____

Dinner:

Food _____

Food Group _____

Day 2

Breakfast:

Food _____

Food Group _____

Lunch:

Food _____

Food Group _____

Dinner:

Food _____

Food Group _____

Day 3

Breakfast:

Food _____

Food Group _____

Lunch:

Food _____

Food Group _____

Dinner:

Food _____

Food Group _____

Day 4

Breakfast:

Food _____

Food Group _____

Lunch:

Food _____

Food Group _____

Dinner:

Food _____

Food Group _____

Day 5

Breakfast:

Food _____

Food Group _____

Lunch:

Food _____

Food Group _____

Dinner:

Food _____

Food Group _____

QuickTime™ and a
TIFF (Uncompressed) decompressor
are needed to see this picture.

<http://www.schools.pinellas.k12.fl.us/educators/tec/Gramlich/BlankP.jpg>

Activity 2.1: Renewable vs. Non-Renewable Materials

The Garden Project of Southwest Colorado
School Garden Resource Guide
Chapter 5: Lesson Plans and Activities- Page 19

(Recycling and Reusing)

Lesson Background:

- Renewable natural resources are those which can be replaced naturally or through human-assisted actions within a relatively short amount of time. Examples of renewable natural resources are plants, animals, water, air, and some energy resources, such as sunlight.
- Nonrenewable natural resources are those available in limited or finite amounts and take millions of years to be replaced. Examples of nonrenewable natural resources are most minerals (e.g., iron ore or bauxite (aluminum) and some energy resources (e.g., fossil fuels). When people recycle and reuse natural resources it decreases the demand on these resources. Non-renewable resources can also be recycled and reused such as plastic and aluminum.

Instruction Part One (Discussion):

1. Write the terms natural and manmade on the board and discuss and have students provide definitions and examples of each. Then, write the terms renewable and nonrenewable on the board. Have students provide definitions and examples for each. Are there some natural materials that are renewable and some renewable?
2. After students have come up with a clear list of nonrenewable vs. renewable, empty out your classes gathered trash and discuss whether these items are renewable or non-renewable.

Deeper discussions...

1. What renewable resources could be used to replace the nonrenewable resources?
2. What advantages and disadvantages might there be for using renewable in place of the nonrenewable resources?
3. What are some examples of resources that would continue to be available no matter how much people used them?

Instructions Part II: Renewable and Nonrenewable Resources in the Garden

Explore your school's outdoor learning space or garden. Find examples of nonrenewable and renewable resources outdoors. (See renewable worksheet) After identifying the renewable resources, ask students for ideas on how these renewable resources are replenished. Some examples may be trees, wildlife and water to be replenished through natural processes such as setting seeds, producing young, and rainfall. Sunlight is a renewable resource that is constantly being restored.

Grade Levels: 4th
Grade and Beyond

Core Subjects:
Science

Key Terms: Renewable versus Nonrenewable; decompose; natural and man-made

Materials:
~Various classroom items
~Trash and Kitchen Waste
~Natural and Manmade
~Materials found in the outdoor learning garden or environment

Instruction Part III: Composting Renewable and Nonrenewable Resources

Revisit your list of resources you created and found in the class's trash collection. Make a list of 15 things and categorize them by which things would decompose naturally. Then ask the students to rank the trash items by which ones might decompose first.

Place these 15 things in a compost or soil. Check on the items every month to test the predictions. Some useful examples of Trash Items to discuss

1. Apple core	2. Eggshells
3. Coffee grounds	4. Bark
5. Paper towels	6. Plastic lids
7. Corn-based plastic cups or baggies	8. Batteries
9. Hair (animal or human)	10. Manure
11. Cotton Products	12. Glass
13. Clothing (ask students to view their labels on their clothes and add to the list)	14. Plastic Lid
15. Aluminum Foil	

Some Conclusions:

- Not all natural resources are renewable. Some resources that come from natural sources such as minerals or fossil fuels are available in limited quantities. Although they were naturally made they would take millions of years to reform.
- When we take care of renewable and nonrenewable resources by composting them or decomposing them, we decrease the need for these resources as well as reduce our trash.
- Even items such as glass, plastic or aluminum that may not compost in a reasonable time can still be recycled therefore minimize the demand and amount of resources needed.

ACTIVITY 2.2: Renewable vs. Non-renewable (observing and identifying materials in nature)

Overview: In this lesson, students will classify, describe and sort natural and manmade materials using a variety of different methods. Students will identify the objects as renewable or nonrenewable based on their classifications.

Lesson Background

- Renewable natural resources are those that can be replaced naturally or through human-assisted actions within a relatively short amount of time (e.g., within a human lifetime). Examples of renewable natural resources are plants, animals, water, air, and some energy resources, such as sunlight.
- Nonrenewable natural resources are those available in limited or finite amounts and take millions of years to be replaced. Examples of nonrenewable natural resources are most minerals (e.g., iron ore or bauxite (aluminum) and some energy resources (e.g., fossil fuels).
- When people recycle and reuse natural resources it decreases the demand on these resources. Non-renewable resources can also be recycled and reused such as plastic and aluminum.

Instructions Part One (Discussion):

Before going to the outdoor learning space, write the terms renewable and non-renewable on the board. Students will share their definitions and provide examples of each.

Instructions Part Two:

1. Set up Stations: Disperse hula hoops in a large outdoor space on the ground. Place a variety of objects within the hula hoop, creating a diverse area for observation. At each observation area ask the student to use a different data collecting method. If the class-size is large, they can be broken up in to small groups and the observation areas run like stations with a time limit then rotating each group through. If the class is small each observation area can be done one at a time. The number of observation areas to be setup and which data collection methods to use can vary depending on how much time and resources are available.
2. Observation and Methods of Observation:

Grade Level:

3rd- 5th grade

Core Subjects: Science

Objectives: Students will be able to differentiate between renewable and non-renewable objects around them. They will do this by using different methods of collecting data

Time of year: Spring or Fall

Material/supplies:

- Dry erase board
- Hula Hoops
- Natural objects- stick, leaves etc
- Man-made objects- wrappers, etc
- Compostable objects- leaves, corn plastic etc
- "What do you see?" worksheet
- "Renewable or not?" worksheet
- Markers, crayons, pens, pencils
- Blindfold

- **Drawing the objects**-give students marker/crayons/colored pencils and the “what do you see?” worksheet and ask them to draw what’s in the hula hoop.
- **Listing the objects**- give them a pen/pencil and the “what do you see worksheet?” and ask them just to list the objects that are in the hula hoop.
- **Using only adjectives**- You can do this individually by having them just write on the worksheet or as a group. As a group, have each student take a turn and orally describe an object in the hula hoop, only using adjectives (bumpy, soft etc..) Then have the others in the group guess what the object is
- **Blindfolded sensory description**- Depending on how many blindfolds are available this can be done as a group or in partners. While blindfolded, ask the students to describe how an object in the hula circle sounds, smell, feels and if possible tastes.
- **Color coding**- Give students multiple colors (pens, pencils, crayons) Assign a different color to things that are renewable, non-renewable, man-made, natural and compostable.

Part two:

Using the data collected on their worksheet. Have the student fill out the “Renewable or Nonrenewable?” worksheet. This worksheet will ask students to identify whether an object is natural or manmade or renewable or nonrenewable. Students are also asked whether the objects can decompose naturally. The purpose of the worksheet is to give students a wide range of objects and observe the connections of natural materials, renewable resources with those that can decompose.

This activity will lead into further discussions of renewable resources and decomposition. Other complimentary lesson plans: [Soil Lasagna](#), [Building Compost Bins](#) and [Renewable vs. Non-renewable Part I](#)

Activity 2.3: Living vs. Non-Living

Overview: Students will identify objects as living or non-living.

Lesson Background:

Living and non-living items are categorized by key characteristics. Living items need food, air, water, and produce young. Animals and plants are living organisms. Non-living items do not need food, air or water and do not reproduce young. Although many non-living items were once alive, students will want to classify those as non-living since they no longer need food air or water and no longer can reproduce

Instruction:

1. Briefly talk about living and non-living things.
2. Assign a class volunteer. Have the student stand up and ask the class the four questions about living or non-living characteristics. Do they need food? Do they need air? Do they need water? Do they produce young?
3. When they answer yes to all questions, ask the volunteer student to stand in the box or hoop. (Students will think this is very funny!)
4. Next, ask students to explore the garden (or outdoor learning space) and find 5 different items. After the students have collected their items, students will put the items into a box or hula hoop labeled "Living" or "I am alive" or "Nonliving" or "I am not alive."
5. After students have collected the items as a class (or in small groups) ask students why they think the items belong in the boxes. Go through the 4 characteristics of living items. If the students can answer YES to all four questions than the item will stay in the Living Boxes. If they answer NO to the questions place the item in the Non-living Box.

Core Subjects: Life Science

Grade Levels: Kindergarten – 2nd Grade

Setting: Garden, forest or other outdoor space

Objectives: Students will be able to classify objects as living or non-living. Students will learn the different classifications of each.

Materials:

- The outdoors
- 2 Boxes or Hula Hoops labeled Living and Non-Living
- 5 various living and nonliving items per student or per small group
- Additional objects (plastic spiders, paper cups, toy cars)

ACTIVITY 2.4 What is Soil? Part I

Overview: Students will collect soil samples and identify that soil is a complex mix of several organic components, sand, and clay.

Lesson Background: What is soil? Soil is a living, dynamic resource that grows the food we eat. It is made up of different materials such as leaves, pine cones, grasses, small sticks, rocks (that have been broken down over time into tiny grains by wind and rain), decayed plant and animal material (organic matter) and numerous species of living organisms. Soils are home to millions of organisms and it is used to feed the world's population. Soil is important for plant growth because it provides many of the nutrients and holds water for the plant. Plants and soil also need sunlight, water, nutrients, earthworms, bacteria and time. Time is a key ingredient for soil. It takes 50-100 years to make an inch of topsoil, imagine that the topsoil we see today started when our grandparents were babies. Talk with the students about the importance of soil in our lives... all of our food comes from soil!

Key Vocabulary: soil, hummus, clay, sand, and loam

Soil: The upper layer of earth, where plants grow. It is a complex mixture of rocks, minerals and organic matter.

Humus: the organic component of soil

Clay: A stiff, sticky particle of earth

Sand: Loose Granular substance made from the erosion of rocks. Found in deserts, beaches and riverbeds.

Loam: a fertile soil containing equal portions of hummus, clay and sand

Instructions:

1. Have the students work in groups of 2-4.

Grade Level: 1st through 3rd Grade

Objective: Students will understand that 1) soil is comprised of many things, including living organisms, and 2) that soil a key ingredient to growing food in their garden.

Subject Area/ CO State Standards: Science
Plant and Earth Science

Duration: 45 minutes

Group Size: 2-4 students per group

Setting: School Garden and surrounding outside school grounds

Materials: plastic bags, small hand shovel, paper plate, pencil/pen, and notebook (for recording observations and conclusions.) watering can

2. Each group has 5 minutes to collect a small soil sample from a designated area outside their school (the garden, a tree bed, the playing field, etc.) in a small plastic bag, using a small hand shovel or trowel.

3. After each group has collected their samples all groups will meet back in the garden with their soil samples in hand. Designate an area for each group to pour their sample onto their paper plate and carefully examine all of the materials in the soil.

4. Write down the following questions on a poster board or dry erase board big enough for the students to see and ask students to record their answers on one piece of paper per group.

- A. What is the color of the soil? (Dark brown, light brown, reddish-brown, etc.)
- B. How does it feel? (Gritty, sandy, smooth, etc.)
- C. What kinds of things can be seen in the sample? (Leaves, small twigs, rocks, worms, paper, plant/food materials, animal material etc.)
- D. What is the texture of the soil? Is it soft, or does the sample have hard clumps?

5. Once the students have answered these questions ask the different groups to share their observations and conclusions leaving the group that observed the garden soil for last. Tour the garden area, taking note of the soil quality in the garden and how it differs from the other group's soil samples. Notice what types of plants are growing in the garden soil and why they are growing in this area versus the other sample sites.

ACTIVITY 2.5: Soil Lesson Part II

Testing the soil- The Shake, Water Retention and More

Overview: Students will collect soil samples and identify that soil is a complex mix of several organic components, sand, and clay. They will identify the soil types as clay, sandy or loamy soil. They will draw conclusions of soil typed based on their findings.

Lesson Background: What is soil? Soil is a living, dynamic resource that grows the food we eat. It is made up of different materials such as leaves, pine cones, grasses, small sticks, rocks (that have been broken down over time into tiny grains by wind and rain), decayed plant and animal material (organic matter) and numerous species of living organisms. Soils are home to millions of organisms and it is used to feed the world's population. Soil is important for plant growth because it provides many of the nutrients and holds water for the plant. Plants and soil also need sunlight, water, nutrients, earthworms, bacteria and time. Time is a key ingredient for soil. It takes 50-100 years to make an inch of topsoil, imagine that the topsoil we see today started when our grandparents were babies. Talk with the students about the importance of soil in our lives... all of our food comes from soil!

Key Vocabulary: soil, hummus, clay, and sand

Soil: The upper layer of earth, where plants grow.

It is a complex mixture of rocks, minerals and organic matter.

Humus: the organic component of soil

Clay: A stiff, sticky particle of earth

Sand: Loose Granular substance made from the erosion of rocks. Found in deserts, beaches and riverbeds.

Loam: a fertile soil containing equal portions of hummus, clay and sand

Instructions:

1. Have the students work in groups of 2-4.

Grade Level: 3rd Grade and Beyond (can be adapted for younger grade levels)

Objective: Students will understand that 1) soil is comprised of many things, including living organisms, and 2) that soil is categorized as sand, clay or loam.

Subject Area/ CO State Standards: Earth and Life Science

Method: Students will collect various soil samples and make observations and conclusions as to what type of soil they collected.

Materials: plastic bags, small hand shovel, paper plate, pencil/pen, and notebook (for recording observations and conclusions.) watering can, Mason Jars for Soil Shake

2. Each group has 5 minutes to collect a small soil sample from a designated area outside their school (the garden, a tree bed, the playing field, etc.) in a small plastic bag, using a small hand shovel or trowel.

3. After each group has collected their samples all groups will meet back in the garden with their soil samples in hand. Designate an area for each group to pour their sample onto their paper plate and carefully examine all of the materials in the soil.

4. Write down the following questions on a poster board or dry erase board big enough for the students to see and ask students to record their answers on one piece of paper per group.

- E. What is the color of the soil? (Dark brown, light brown, reddish-brown, etc.)
- F. How does it feel? (Gritty, sandy, smooth, etc.)
- G. What kinds of things can be seen in the sample? (Leaves, small twigs, rocks, worms, paper, plant/food materials, animal material etc.)
- H. What is the texture of the soil? Is it soft, or does the sample have hard clumps?

Testing Your Soil:

Part I: Water Retention

1. With the various soil samples put one sample at a time in a strainer and hold it over a garden bed. Pour the same amount of water over the each type of soil to test how well it absorbs the water. Measure the amount of soil drained.

Soil Type Based on Water Drainage Only:

- Sandy soil has the largest particles and water permeates the soil easily. Water will run through sandy soil. (MOST WATER DRAINED)
- Clay soil has the smallest particles. Clay holds the most water, but it holds it so tightly it makes it hard for the water to reach the plant roots. (LEAST WATER DRAINED)
- LOAM is the mix of both of these soils and makes the water most readily available to the plants. (AVERAGE WATER DRAINED)

Part II: Testing Plant Health in Soils:

In the classroom, garden or greenhouse, have the student's plant flowers or vegetables in each of the soil samples. Record how often the plants are watered. Monitor the growth and development of the seeds or plants in the 3 different soil types (sand, clay or hummus). Ask students to determine which soil was the best environment for plant growth and why they believe this to be true.

Part III: The Soil Milkshake

1. Using the various soil samples, add a quart size mason jar filled $\frac{1}{2}$ way with soil. The soil should be relatively moist before adding to jar.
2. Next, add water to the mouth of the jar.
3. Let soil settle- 45 minutes to overnight, before reading the results.
4. Ask students about the observations. What settled to the bottom? What materials rose to the top? What was the color of the water? What is the composition of soil, silt and clay in the soil?

Other Complimentary Lesson Plans include: [Soil Lasagna](#), [Compost Building](#) and the [handout on worm castings](#).

ACTIVITY 2.5 Building a Lasagna Garden: Sheet Composting and Winterizing the Garden

Overview: Soil Lasagna gardens teach students about soil composition and decomposition. Soil lasagna gardens also save time tilling garden beds and add necessary nutrients to the soil.

Lesson Background:

Sheet Composting is a method of spreading organic matter over the soil and allowing it to compost where it sits. Waiting several weeks or months allows it to decompose, saving time tilling the beds in the spring. When starting sheet composting projects with students, we refer to it as making “soil lasagna.” A sheet-composted garden prevents weeds from growing (by blocking out light), provides rich organic soil (by adding compost and organic material) and saves time (by letting the lasagna do the work). Overall there is less digging, less weeding and a rich soil full of earthworms.

Cardboard and newspaper serve as a carbon input and are beneficial by blocking out sunlight and killing existing weeds or grass. The cardboard also provides a moist, dark habitat for worms. Worms and their eggs can live in the soil for several years waiting for the right moisture, food, and habitat to begin its life cycle again.

Compost is necessary to provide the right amount of “green” or nitrogen to your soil. You can use green materials, such as kitchen waste, manures (fresh or old), and green grass. Green materials provide nitrogen that enables microorganisms to develop bodies, which are necessary to digest their carbon source. **Do not use meat or dairy products as part of your compost, as they can encourage disease and encourage pests.*

Mulch is your dry “brown” vegetation including dry grass and weeds, leaves, straw, hay, dry compost crops, even woody materials. Dry “brown” materials provide carbon that serves as an energy source for all life forms.

INSTRUCTIONS:

First Layer “The Noodles”

1. Mark your garden plot.

Time of Year: Fall for spring planting

Grade Level: Pre K and Beyond

Objectives: Students will learn about decomposition, soil composition and plant nutrition.

Duration: 30- 60 minutes (depends on size of the garden)

Materials:

- Cardboard
- Mulch (grass clipping, straw or hay, leaf litter)
- Compost (garden compost, manure, soil amendments, kitchen water, plant materials)

2. Moisten 6 layers of newspaper or one layer of cardboard. Spread paper/cardboard on garden plot or grass.
3. If starting on an existing bed, dig the first few inches of soil using shovels, forks, and garden hoes. If starting on grass, you can turn the grass over or begin composting directly on the grass.

Second Layer “The Sauce, The Meat and The Veggies”

4. Spread 4-6 inches of garden compost, manure, or soil mix on top of the “noodles.”

Final Layer “The Cheese”

5. Mulch the compost with 6 inches of straw, leaf litter, or grass clippings.
6. Water the new garden space.
7. Use twine and stakes to mark the spot, to keep people off your plot and avoid compacting the soil.

Adding Layers: To increase the depth of your garden, you can till the existing ground or add inches or layers to your garden. It is best to add the compost and mulch and skip the cardboard/newspaper layers when building your garden depth.

Plant roots prefer deep tilled rich soil, ideally 12 inches or more. Plants can spread their roots 2 ft and beyond. So, the deeper, the stronger and healthier the root system, the healthier the plant the will be.

Cooking Soil Lasagna: Let your lasagna garden cook for 3 to 6 months before planting. The compost should be unrecognizable; its smell is fresh and woody, and the materials are dark brown or black.

Planting the Lasagna Garden. A dry winter will leave your noodles only partially broken down. If this is the case, remove some of the cardboard or newspaper, or plant directly into it.

HISTORICAL NOTE:

- Sheet composting is similar to methods developed by ancient cultures, notably Native Americans. To follow native traditions, dig a shallow trench (6-8 inches deep) the length of your garden bed. Fill the trench halfway with organic matter, including kitchen scraps. Cover the trench with soil and plant on either side of the trench.
- Native Americans put fish heads and various other fish parts into the soil. Although this method works great, it does have one problem. Rotting fish parts may attract animals--cats, dogs, raccoons and rodents. To avoid attracting animals in your garden, avoid the fish and use other sources of organic materials.

EXTENSIONS:

- Discuss how nature has a built-in lasagna garden called the “forest floor”. Ask students what materials are found in the forest floor such as leaves, seeds, decaying trees and branches, animal scat, decomposing animals, and insects.
- Discuss the different types of soil (loam, sand, and clay).
- Discuss the role of earthworms in the garden and their role as decomposers.
- Complimentary lesson plans are available on [worms and compost building and soil.](#)

Activity 2.6 Habitats and Hula Hoops

Overview: Students will describe and identify various habitats in an outdoor learning space. Students will identify and discuss key elements of a habitat including available food and water and shelter.

Lesson Background:

- Every living thing, plant or animal, has a home or a habitat. A habitat is place where a plant or animal can find the necessary food, water and shelter to survive.
- Different animals and plants have different habitats. Several plants and animals can share the same habitat.
- Some plants and animals can survive in many habitats. Others are found in just a few.
- Human beings can positively or adversely affect a plant or animal habitat.

Grade Levels:

2nd Grade and Beyond

Core Subjects: Life Science

Materials:

- Science Notebook, Journal or Paper
- Outdoor Learning Space
- Hula Hoops or Rope to Define Scope of Habitat

Instructions:

1. Briefly discuss as a group the necessary elements of a habitat. Use a student as an example. What would make a good habitat for this student? Do they have food to eat, water to drink and a house for shelter?
2. Students will then be given their journals, notebooks or habitat worksheet.
3. Students will break up into groups of 2-4 in the outdoor learning space.
4. Each group or student will identify a living plant or animal in the learning space.
5. Students will be given a hula-hoop or 4-foot long rope to identify the scope and size of the habitat.
6. Next students will use their journal to list: what they found (plant or animal), where they found it, describe its habitat and answer if it has food, water or shelter nearby.
7. Lastly, the students will write down or share with the group whether these are good habitats.

Extension:

- Instead of using the worksheet, students can simply draw and label their hula-hoop, the habitat, and living and non-living items in the habitat.

Habitat Worksheet

Habitats are places where animals or plants find their basic needs for food, water, and shelter. Find a plant or animal in the garden living in its habitat and fill in the boxes below.

What I found	Plant or Animal	Where I found it	Describe its habitat	Does it have Food, Water, or Shelter nearby?
Ex. Grasshopper	Animal	In some weeds	Moist and wet	Food- Leaves, Shelter- plants Water- Rain,

How could people change the habitat for these plants or animals? Are there ways our actions might make a better or worse habitat?

Activity 2.8 Ladybug Release: Pests and Guests

Overview: In this lesson, students will learn about the role bugs play in the garden and in the wild. Students will learn and share facts about common garden bugs. In the activity, students will be responsible for releasing hundreds, even thousands of ladybugs.

Lesson Background:

Ladybugs play an important role in the health of our gardens and wildlife. Farmers and gardeners use ladybugs in gardens and greenhouses to control aphid populations, but they can also eat mealybugs, whiteflies, scale and mites. Here are additional fun ladybug facts:

- Ladybugs can eat up to 2000 aphids in a lifetime (about a year).
- Ladybugs have many protective traits to warn off potential predators such as a hard shell, bright colors, a stinky smell and they can even play dead.
- They chew their food from side to side.
- For a list of more cool ladybug facts visit <http://everything-ladybug.com/ladybug-facts.html>

Grade Levels:

Kindergarten – 2 (but can go beyond)

Core Subjects: Science

Materials:

Ladybugs
Ladybug Poems
Ladybug Facts
Water for Lady Bug Release
Magnify Glass
Optional:
Aphids to demonstrate
Green Lacewing Larvae
Praying Mantis

Instructions:

1. Discuss the possible bugs we have in our gardens: grasshoppers, ladybugs (ladybeetles), pillbugs (sowbugs).
2. Divide the class into 2 groups: one group to read [ladybug facts](#) and one smaller group to read or share [ladybug poems](#).
3. Hand out a ladybug fact to each student or pass around a fact sheet, so each student can share one fact. Have the students read the facts out loud to the group.
4. Assign a poem to the other students and let them play the role of different ladybugs. 5-7 students can read the poem.

Releasing the Ladybugs:

1. After following the instructions received with your ladybug order, bring the ladybugs out of the fridge to begin to wake them up.
2. In advance, either water the area of the garden (overhead or hand water) where the bugs will be released. Students can also be given squirt bottles with water to spray wear the bugs land or where they will be released.

3. Share safety instructions with the kids such as: watching wear you step once the bugs are released, gently release the ladybugs, don't shake in the air.
4. Next collect and release the bugs. Students can put one arm into the ladybug bag and let the bugs crawl up their arm. Next students can move to a plant in the garden and gently move the bugs onto the plants.

Poem:

Five Little Ladybugs

Five little ladybugs climbing on some plants, □

Eating the aphids, but not the ants. □

The first one said, "Save some aphids for me."

□The second one said, "They're as tasty as can be." □

The third one said, "Oh they're almost gone."

□The fourth one said, "Then we'd better move on." □

The fifth one said, "Come on, let's fly!" □

So they opened up their wings and they flew through the sky.

Activity: Biodiversity

Materials:

Grade Levels: 5th Grade Science

Core Subjects: Science

Lesson Background:

Biodiversity “The Variety of Life on Earth”

Name: _____

Class: _____

Zone or Area I studied: _____

All ecosystems (habitats or zones) contain unique mixes of life forms (plants and animals). This unique mix is also described as biodiversity. Each plant, animal and organic material in the ecosystem plays a role in the health of the ecosystem. In the following table, you will note what plants, animals or other materials are present in the garden. You will also note their role in the garden.

What I found	Describe it (plant, animal, other)	Estimate how many live in the zone	What is my role in the garden? Feel free to make guesses on how they might impact another life form.
Ex. Grasshopper	Animal	10 or more	I eat the leaves of plants. I provide food for birds.
Ex. Unknown Plant	Large shrub with red leaves, and berries	1	I could provide habitat for birds and my berries could provide food.

Activity: Sensory Exercises (see Shari's notes)

Materials:

Sensory Cards

Grade Levels: Kindergarten - 2

Core Subjects: Science

Lesson Background:

Activity: Nature's Recyclers

Materials:

Pillbugs or sowbugs
Worms

Grade Levels: Kindergarten - 5

Core Subjects: Science

Lesson Background:

Activity: Soil composition (Soil Milkshake)

Materials:

Grade Levels: Kindergarten - 2

Core Subjects: Earth Science

Lesson Background:

- Soil is made from small pieces of rock plus material from plants and animals.
- 3 Types of Soil
- Humus, Clay, and Sand