



# **TreesGreenville Companion Curriculum**

## **Presented by Michelin North America**

**Effectively Using the Outdoor Classroom**

**Elementary School Curriculum for Interdisciplinary Studies**

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## Introduction

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The following curriculum is written with the intent to provide interdisciplinary opportunities in the use of a school's tree garden, outdoor classroom or learning environment. Lessons provided are elementary levels Kindergarten through fifth grade. Four lessons are provided at each grade level to address cross-curricular studies aligned with South Carolina's State as well as National and Common Core Standards. Lessons are grade-level appropriate, yet can be modified to be used in a different level with adjustments to pacing and assessment. These lessons give the students and teacher a chance to go outdoors and integrate the natural environment into units of study in core and related arts classes. Each lesson plan is comprehensive including such components as aligned standards, unit of study, essential questions, multi-step procedures, assessment opportunities, differentiation options, and extensions to extend learning. The primary purpose of these lessons is to encourage the use of an outdoor classroom amongst all disciplines and grade levels, beyond just science class. It is the hope that this curriculum guide will inspire teachers to develop their own ideas of use above and beyond what is presented in order for the outdoor classroom to become an integral part to the school, its curriculum, and all students' learning.

## Background

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Teachers, this curriculum guide is intended for you to use at any point in the year where the lesson aligns with your unit of study. Many materials, including worksheets and rubrics, are included for your use in order to make the use of these lessons as easy and convenient as possible. All lessons are correlated to South Carolina State Standards as well as the latest National and Common Core Standards. Each lesson also includes:

- A. Associated Reading Materials (integrating literacy with CCSS in mind)
- B. Guiding Questions
- C. Lesson Objectives
- D. Essential Questions
- E. Materials List
- F. Activating and Closing Strategy
- G. Daily Procedure Plans
- H. Assessments

In addition to grade-level specific lessons, there are a handful of lessons at the end of the curriculum guide that specifically focus on the goal of the TreesGreenville organization which is planting, maintaining, and preserving trees. These can be modified to fit many different grade levels.

Please feel free to edit and change lessons to make them more appropriate for your style, unit of study, or type of student you are working with. Again, this is to encourage you to use your school's outdoor classroom more frequently and to incorporate a more interdisciplinary approach and thinking for you and your students as they learn required material. Thank you for taking your classroom outdoors!

# KINDERGARTEN

Effectively Using the Outdoor Classroom  
Elementary Curriculum for Interdisciplinary Studies

KINDERGARTEN

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**“My Tree Secret Pal”**

**UNIT:** Scientific Inquiry

**Unit Essential Question:** What skills does a scientist need and how does he/she use those skills?

**LESSON:** Skill of Observation

**STANDARDS ADDRESSED**

(National Common Core State Standards - Writing)

CCSS.ELA-Literacy.W.K.2 Use a combination of drawing, dictating, and writing to compose informative/explanatory texts in which they name what they are writing about and supply some information about the topic.

(South Carolina State Science Standards)

K-1: The student will demonstrate an understanding of scientific inquiry, including the processes, skills, and mathematical thinking necessary to conduct a simple scientific investigation.

Indicators:

K-1.1 Identify observed objects or events by using the senses.

**Guiding Questions:**

1. How can one use their senses to make observations?
2. What sense or senses are most important in making observations?
3. How can one share what they have experienced with others?

**Associated Reading Materials:**

- Voices from the Wild - An Animal Sensagoria. *Bouchard, David*. ISBN 0811814629. Publisher: Chronicle Books. 1996. Describes how animals use their senses to survive in the wild. The book is divided into five sections - sight, smell, touch, hearing, and taste. Each section features five animals relating the special ways in which a particular sense helps them to hunt, avoid predators, and care for their young.
- My Night Forest. *Owen, Roy*. ISBN 0027690059. Publisher: 0027690059. This story takes children on a nighttime journey deep into the forest and into the lives of five animals: an owl, wolf, bear, deer, and mouse. The story explores what these night creatures hear, see, smell, taste and touch in the middle of the night in the forest.

**Lesson Objective(s)**

Students will be able to:

1. Share observations experiences through their senses

2. Explain their sensory observations through drawing, dictation, or writing
3. Understand the foundation of scientific inquiry – making observations in a simple scientific investigation

#### Materials/Resources

- Blindfolds
- Unlined and/or lined paper
- Pencils and/or colored pencils
- Recorded animal sounds

#### Essential Question(s)

How does a scientist make observations?

How does a scientists share his/her observations with others?

#### Activating Strategy

In the classroom, play two or three animal sounds and ask the students to tell you what made those sounds. Once they have guessed correctly, ask them how they knew – what sense was used to guess? Follow with questions such as:

- (1) How do our senses experience the world?
- (2) What can our senses tell us? (For example, if we smell something smoke, we can guess something is burning)
- (3) How do we share what we have experienced through our senses?

#### Procedure

1. Take students outside to an outdoor tree garden, nature trail, or classroom.
2. Pair students up and have one student in the pair blindfold their partner.
3. Once students are blindfolded, have the partner lead them to a tree.
4. Once there, ask them to use their sense of touch/smell/hearing to learn all they can about their tree.
5. After 3-5 minutes, have the leading, sighted student lead their partner back to the central starting point and take their blindfolds off.
6. Next, on unlined or unlined paper, have the once-blindfolded student write down words, phrases or sentences (or draw a picture) about what they experienced when at their tree. Also, ask them to verbally share with their partner what they experienced.
7. Next, ask the once-blindfolded partner to find their tree; their partner can verify if they find the correct tree.
8. Partners switch roles and steps 2-7 are repeated.

#### Closure (Reflection)

Ask students to share:

1. What sense(s) they had to rely on most
2. How easy it was to correctly identify their tree
3. How this activity can be related to what scientists do when observing the natural world

**Assessment:** Collect written/visual evidences created by students from their tree observations

**Extension:** Take tree field guides outside with you and have students take the activity further by trying to identify the name of the trees they observed.

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## KINDERGARTEN

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### **“Nature’s Alphabet”**

**UNIT:** Reading Words and the Alphabet

**Unit Essential Question:** What letters and words make up our English language?

**LESSON:** Skill of Recognizing Upper and Lowercase Letters of the Alphabet in Script and Cursive

### **STANDARDS ADDRESSED**

(National Common Core State Standards – Reading, Foundational Skills)

Print Concepts

1. Demonstrate understanding of the organization and basic features of print:
  - a. Follow words from left to right, top to bottom, and page by page.
  - b. Recognize that spoken words are represented in written language by specific sequences of letters.
  - c. Understand that words are separated by spaces in print.
  - d. Recognize and name all upper - and lowercase letters of the alphabet.

(National Common Core State Standards - Writing)

CCSS.ELA-Literacy.W.K.2 Use a combination of drawing, dictating, and writing to compose informative/explanatory texts in which they name what they are writing about and supply some information about the topic.

(South Carolina State Science Standards)

K-1: The student will demonstrate an understanding of scientific inquiry, including the processes, skills, and mathematical thinking necessary to conduct a simple scientific investigation.

Indicators:

K-1.1 Identify observed objects or events by using the senses.

**Guiding Questions:**

1. How does the upper and lowercase form of a letter look the same? Different?
2. What skills are needed to observe the world around us?
3. How can I share information I find from my observations?



**Associated Reading Materials:**

- So Many Circles, So Many Squares. *Hoban, Tana*. ISBN 0688151655. Publisher: Greenwillow Books. 1998. Tana Hoban is known for her bright, colorful picture books. In this book, circles and squares are discovered everywhere in the natural and man-made world.
- Eye Spy Shapes. *MacKinnon, Debbie*. ISBN 0881061352. Publisher: Charlesbridge. 2000. Bright colorful photographs invite the reader to listen to the clues and look through the peepholes to discover five simple shapes: a square, triangle, circle, star, and rectangle.
- Nature Spy. *Rotner, Shelley and Kreisler, Ken*. ISBN 0027778851. Publisher: Macmillan. 1992. Photographs portray a young girl as she takes a close up look at nature's wonders examining an acorn on a branch, the lines on a leaf, and the golden eye of a frog.
- The Shape of Me and Other Stuff. *Seuss, Dr.* ISBN 0679886311. Publisher: Random House. 1997. Rhyme and silhouette encourage children to consider the shape of bees, beans, flowers, and big machines.

**Lesson Objective(s)**

Students will be able to:

1. Demonstrate they recognize their letters – Uppercase and Lowercase
2. Share their observations and what they find through photography, writing, and verbal response
3. Understand how to be creative in observations of the world around them

**Materials/Resources**

- Digital camera (1 for class or one per group)
- Example photos of letters found in nature

**Essential Question(s)**

- What do the letters of the alphabet look like?
- How do uppercase and lowercase letters look the same or different?

**Activating Strategy**

In the classroom, show the students the three example photographs from “Nature’s Alphabet.” (Page 11) Ask students what they see in the photographs. Some students may see the natural or in-nature object while some may see the letter. If they see the element of or in nature first, then ask them if they can find the letter. If they see the letter first, ask them what element of nature they see. Tell them that the letters of the alphabet can be found anywhere! They will get a chance to go see for themselves.

**Procedure**

1. Take students outside to an outdoor tree garden, nature trail, or classroom.
2. Divide students into small groups or travel as a whole class.
3. Take time to wander around and take photos of letters (upper- or lowercase) found in the natural environment (like seen in the examples).

4. Let students know they do not need to look for the letters in order and, depending on time, it may not be possible to find all letters. However, encourage them to be creative in looking and let them know that sometimes it is not obvious. As the teacher, you may need to demonstrate and find a couple of examples.
5. After spending a good amount of time searching and photographing, take the students to place to sit and reflect (inside or outside).
6. Discuss with the students what they found, what the letters looked like, and what type of letter they found most often.

**Closure (Reflection)**

Ask students to share:

1. Recollections of how they looked for and found letters
2. What type of letters they found easiest and those harder to find
3. How important it is to make careful observations

**Assessment:** Ask students to share their travels or experience taking photos through a journal entry or annotated drawing

**Extension:** Take photographs and turn it into a slideshow of the alphabet to print and display or present to other classes or the school

**“Nature’s Alphabet”**  
**Example Photos**

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Photo #1:



Photo by Joe Rossi

**“Nature’s Alphabet”**  
**Example Photos**

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*(continued)*

Photo #2:



Photo by Bobbi (from *Snoodles.Doodles* Blog)

## “Nature’s Alphabet”

### Example Photos

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*(continued)*

Photo #3:

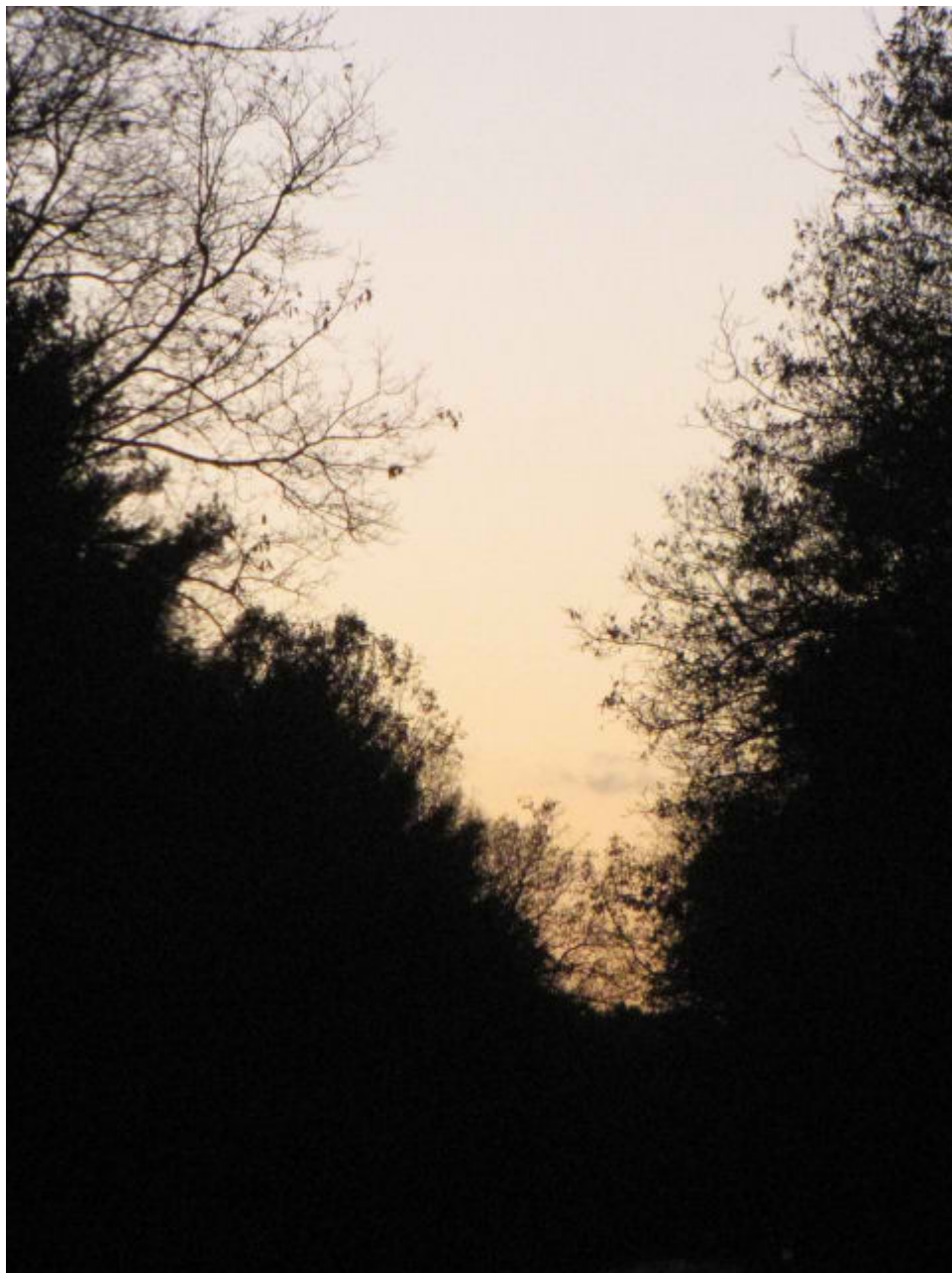


Photo from *My Quality Day* Blog

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KINDERGARTEN

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**“Move Like an Elephant Moves”**

**UNIT:** Organisms Around the World

**Unit Essential Question:** What are the different organisms around the world and how can we tell them apart?

**LESSON:** Different Animals and their Movement

**STANDARDS ADDRESSED**

(National Common Core State Standards - Writing)

CCSS.ELA-Literacy.W.K.2 Use a combination of drawing, dictating, and writing to compose informative/explanatory texts in which they name what they are writing about and supply some information about the topic.

(South Carolina State Physical Education Standards)

Standard 1: The student will demonstrate competence in motor skills and movement patterns needed to perform a variety of physical activities. (Psychomotor Domain) The student should develop fundamental movement patterns (for example, throwing, receiving, jumping, striking) to a level of mature form in simple conditions and gain control of the varied use of these patterns.

Indicators

K-1.1 Travel with control forward and sideways using a variety of locomotor skills (including run, jump, hop, gallop, and slide) and change directions in response to a signal or obstacle.

K-1.2 Move in general space in a controlled manner to avoid contact with people and objects and be able to stop in control on command.

(South Carolina State Science Standards)

Standard K-2: The student will demonstrate an understanding of the characteristics of organisms. (Life Science)

Indicators

K-2.2 Identify examples of organisms and nonliving things.

K-2.4 Compare individual examples of a particular type of plant or animal to determine that there are differences among individuals.

Standard K-3: The student will demonstrate an understanding of the distinct structures of human body and the different functions they serve. (Life Science)

### Indicators

K-3.1 Identify the distinct structures in the human body that are for walking, holding, touching, seeing, smelling, hearing, talking, and tasting.

### Guiding Questions:

1. How do different animals move?
2. What animals move on two legs? Four legs? No legs?
3. How can I show with my own body how an animal moves?
4. How do animal movements relate to characteristics like their habitat, method of eating, protection?
5. How do I explain to others how animals move?

### Associated Reading Materials:

- Swing, Slither or Swim: A Book About Animal Movements. *Stockland, Patricia M.* ISBN 0688151655. Publisher: Capstone Press. 2005. This inviting picture book explains how nine different animals get around and why they move the way they do. The sidewinder rattlesnake lives in dry, sandy deserts where it is easier to throw itself over the ground than to slide through the sand. The jellyfish moves by jet propulsion--first a big push, then a long glide. Other animals profiled include the kangaroo, gecko, and spider monkey.
- Do Goldfish Gallop?: A Book about Animal Movement. *Dahl, Michael.* ISBN 9781404801059. Publisher: Picture Window Books. 2003. Children can run, walk, skip, and jump. How do animals move? Find out in this entertaining look at animal movement. Poetic text and colorful art introduce children to fascinating facts about different types of animals.

### Lesson Objective(s)

Students will be able to:

1. Demonstrate they recognize different animal movements
2. Use physical movement to demonstrate motor skill competency
3. Share their observations and knowledge of organism differences through writing

### Materials/Resources

- Pictures or Photographs of a Variety of Animals (Music, optional)

### Essential Question(s)

- How do different animals move?
- How do different animals movement relate to where they live? Get food? Etc.
- What words can describe different animal movement?

### Activating Strategy

Step 1. Show photographs of a variety of animals. Explain that each animal moves in its own unique way.

Step 2. Tell students to look at the pictures of animals and think of other animals in their

own minds. Ask questions such as:

Which animals move slowly?

Which animals climb?

Which animals swim?

Which animals run fast?

Which animals crawl?

Which animals hop?

Which animals fly?

➔ Write a list for each category of student responses.

Step 3. Ask "Which animals move in more than one way?"

Step 4. Discuss ways people can move. Ask students to describe how they got to school today. Are there other ways people move? List all the words students can name that describe how people move from place to place without the aid of a machine (car, bus, bike, etc.). Write the list horizontally across the top of the board or chart with room under each category. Words might include: walk, run, skip, hop, jog, shuffle, swim, crawl, climb.

Step 5. Show students one picture at a time and discuss how each animal would move. Are there ways animals move that people cannot (without help, like fly) that could be added to classifications? Have students demonstrate what that animal movement might look like and then classify the animal pictures on the graph according to those that hop, run, fly, climb, crawl, swim, slither, etc., or move in more than one way.

### Procedure

1. Take students to the outdoor classroom/nature area and divide students into two teams.
  2. Line the teams up on two sides of a large area.
  3. Show one team an animal picture.
  4. Instruct one team to walk toward the other team and, on a given signal, imitate the movement of their animal. When the other team guesses the animal, they chase the first team back to their line (using the animal movement). Those "captured" return with the other team.
- OR-
5. Place poly-spots (or some kind of markers) around the area outside.
  6. Have each child stand on a spot and then hold up a card with an animal movement.
  7. Start music and when the music starts, ask students to move around like that animal.
  8. When the music stops, have the students freeze on a poly-spot in a pose like that animal. Once the students are frozen, walk around and comment on their poses (encourage them to try to come up with a unique way to show the animal).
  9. Some animals for students to try:
    - Kangaroo: long, big jumps
    - Puppy walk: on hands and feet, keep head up to see where you are going
    - Cat walk: like puppy, but try and arch back
    - Bear walk: heavy and slow on hands and feet
    - Frog jump: use hands to push off the floor, try and go high
    - Seal walk: bellies and legs on the floor, pull body with hands (flippers)



## TreesGreenville Companion Curriculum: Elementary Level

- Elephant walk: stomp feet and use arms to make a trunk, slow and heavy
- Donkey kick: kick back feet in the air (make sure and stay in your own space)
- Inchworm: on hands and feet — walk feet to hands, then walk hands out, repeat
- Crab walk: belly up using hands and feet

\*An option is to let them make animal noises while they were moving and when the music stops, they completely freeze (voices too).

### Closure (Reflection)

Ask students to share:

1. Words that describe different animal movements
2. How important an animal's movement is to how they live

**Assessment:** As part of an ongoing assessment, note each student's ability to name animals, list animal movements, and sort animals by movement.

**Extension:** Play animal charades with students seated in a large circle. One student in the center of the circle imitates the way an animal moves without telling the students which animal he is pretending to be. If students are unable to guess, additional clues could be given, such as the sound the animal makes, what it eats, its color or body covering. The student who guesses trades places with the student in the center.

**Strategies for Diverse Learners:** Learn the names of some of the animals in the language of ESL students in the classroom. Labels for animal names and movements could be posted in each language.

# FIRST GRADE

## Effectively Using the Outdoor Classroom

### Elementary Curriculum for Interdisciplinary Studies

#### FIRST GRADE

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#### **"Rocks Rock!"**

**UNIT:** Earth's Materials

**Unit Essential Question:** What are the different materials that make up the Earth?

**LESSON:** Rocks and Soil

#### **STANDARDS ADDRESSED**

(South Carolina State Science Standards)

Standard 1-4: The student will demonstrate an understanding of the properties of Earth materials. (Earth Science)

Indicators:

- 1-4.1 Recognize the composition of Earth (including rocks, sand, soil, and water).
- 1-4.2 Classify rocks and sand by their physical appearance.
- 1-4.3 Compare soil samples by sorting them according to properties (including color, texture, and the capacity to nourish growing plants).

#### **Guiding Questions:**

1. What are rocks?
2. How do we use rocks? Why are they important?
3. What makes up soil?
4. Why is soil important?

#### **Associated Reading Materials:**

- If You Find A Rock. *Christian, Peggy*. ISBN 0152063544. Publisher: Sandpiper. 2008. Think of all the rocks there are: skipping rocks, splashing rocks, climbing rocks, and wishing rocks. Children can't help collecting them. With joyful, poetic text and luminous photographs, *If You Find a Rock* celebrates rocks everywhere—as well as the mysterious and wonderful places they are found.
- Jump Into Science: Dirt. *Tomecek, Steve*. ISBN 1426300891. Publisher: National Geographic Childrens Books. 2007. What is soil? Who lives in dirt? How does earth help things grow? The answers are within this fun- and fact-filled picture book. Just follow the gardening star-nosed mole in the colorful outfits...and dig in!!
- Dirt: The Scoop on Soil. *Rosinsky, Natalie M*. ISBN 1404803319. Publisher: Picture Window Books. 2002. Sand, silt, clay, and humus. Dig deep into this book about soil to discover the world beneath your feet.

#### **Lesson Objective(s)**

Students will be able to:

## TreesGreenville Companion Curriculum: Elementary Level

1. Recognize the composition materials of Earth
2. Describe soil and its components
3. Explain the importance of rocks and soil

### Materials/Resources

- Rock collection
- Egg cartons (students can bring in)
- Rock Report Template (included)
- Sifters
- Buckets

### Essential Question(s)

- What are the various materials that make up the Earth?
- What makes up soil?
- How are rocks and soil important?

### Activating Strategy

(Prior to this lesson, have students bring in or have for each student an egg carton)  
Read your students the story "If You Find a Rock" by Peggy Christian. Next present the kids with your own rock collection. These rocks can be just every day, ordinary rocks that you have picked up in your yard or alongside the road. They could also be special rocks you have either purchased or inherited – i.e. pieces of crystals, fool's gold, pumice, or volcanic glass. Let the kids explore--touch, feel, use hand lenses, sort, and just play with the rocks. Next, let the kids know that you are going to take the kids outside and let them collect rocks for their own collection.

### Procedure

1. Take the class to an outdoor space, give them an egg carton for collecting (one rock per slot), and give them a time limit to explore and collect.
2. After the kids have explored for a while, bring them back together to show off what they found through a quick "show and tell."
3. Next have students fill out rock reports on their rocks to include in their science journals. (They also can do reports on their friends' rocks, as well to end up with several reports in their journals).
4. Put all of the rocks together on a shelf in the classroom and create a Rock Museum. The museum can stay up throughout the unit or even the rest of the year. An idea is to leave some hand lenses out and the kids can go explore in the museum whenever they have some free time.

### *POSSIBLE DAY TWO EXTENSION:*

1. On the second day, take a walk around the school and campus to look for things made of rock. The kids may be very literal and may only point out things that are very obviously made from rock (like--say--rocks).

2. After a trip around, go to a gathering place or back to the room and make a list (usually very short at this point). Then discuss and show the students the different ways rocks can be used.
3. After you have discussed and explored rocks for a while, head back outside or back into the field to explore dirt. Take scoops and shovels and buckets to a nice, dirty spot. Then dig! Take sifters that are different sizes and sift the dirt into smaller and smaller pieces. Scoop and shake and shake and scoop.
4. Look with hand lenses to find such things as rocks, seeds, and bugs – then have students record their findings in their science journal.
5. Finally bring some dirt in for a more formal investigation the next day. Methodically use the sifters and divide the particles into different bowls according to their sizes. When done, the kids can clearly see that soil is made up of tiny, little rocks. The kids record their findings in their science journals. Finally, talk about how soil is essential to life. Without soil, we'd have no plants. Without plants, we'd have no fruits or vegetables. Animals would have no food to eat. So people would have no food to eat.

#### Closure (Reflection)

Ask students to share:

1. How they look at soil differently
2. What they have learned about the importance of rocks and soil

**Assessment:** Collect Science Journals for a summative assessment

#### Extension: Science Lab Experiment

##### **What You Need**

- 2 Clear wide-mouth plastic jars with lids
- 10 Small rocks
- A sieve
- Water

##### **What to Do**

Take a rock collecting walk with the children. When they have found approximately 10 rocks, ask them to “get to know” them. Brainstorm ideas as to how to accomplish this. Then, ask the children to place their rocks in one of the containers. Add water until they are just covered. Securely tighten the lid. Start to shake the jar and count to 100. When the water becomes cloudy, have them carefully pour the rocks and water through the sieve, catching the water in the second jar. Examine the rocks. What has happened? What changes do you see in the water and the rocks? What do you feel inside the jar? Repeat the process. What happens this time?

##### **Vocabulary**

1. Minerals: Solid, inorganic, naturally occurring substances that have specific properties; Minerals are the building blocks of rocks.
2. Pebbles: Small stones worn smooth and round by the action of water or ice.
3. Rocks: Solid mixtures of minerals. There are three types of rocks – sedimentary,

metamorphic and igneous.

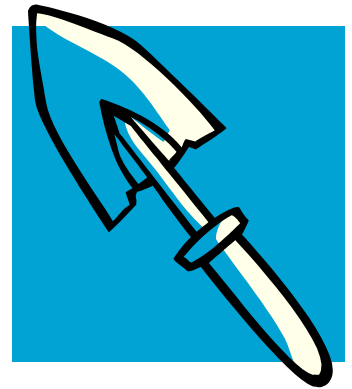
4. Weathering: The slow breaking down of rocks on the earth's surface by rain, wind, heat, frost, and/or water

# MY ROCK REPORT

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PICTURE:

□



SIZE: \_\_\_\_\_

COLOR: \_\_\_\_\_

SHAPE: \_\_\_\_\_

My rock feels \_\_\_\_\_.

## Effectively Using the Outdoor Classroom

### Elementary Curriculum for Interdisciplinary Studies

#### FIRST GRADE

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#### “Aliens on Earth”

##### UNIT: Plants

Unit Essential Question: What different types of plants are there and what are the characteristics that help a plant survive?

##### LESSON: Native and Non-native Species

##### STANDARDS ADDRESSED

(South Carolina State Science Standards)

Standard 1-2: The student will demonstrate an understanding of the special characteristics and needs of plants that allow them to survive in their own distinct environments. (Life Science)

##### Indicators

1-2.3 Classify plants according to their characteristics (including what specific type of environment they live in, whether they have edible parts, and what particular kinds of physical traits they have).

1-2.5 Explain how distinct environments throughout the world support the life of different types of plants.

1-2.6 Identify characteristics of plants (including types of stems, roots, leaves, flowers, and seeds) that help them survive in their own distinct environments.

##### Guiding Questions:

1. What are Native species? Why are they important to a community?
2. What are Non-native species? Why are they significant to a community?
3. What are examples of Native and Non-native species in our community?

##### Associated Reading Materials:

- Aliens from Earth: When Animals and Plants Invade Other Ecosystems. *Batten, Mary*. ISBN 156145236X. Publisher: Peachtree Publishers. 2003. Explores how and why plants and animals enter ecosystems to which they are not native, as well as the consequences of these invasions for other animals, plants, and humans.
- Invasive Plants of the Upper Midwest: An Illustrated Guide to Their Identification and Control. *Czarapata, Elizabeth J.* ISBN 0299210545. Publisher: University of Wisconsin Press. 2005. Informative, colorful, comprehensive guide to invasive species that are currently endangering native habitats in the upper Midwest region.
- Exotic Species: Invaders in Paradise *Guiberson, Brenda Z.* ISBN 0761313192. Publisher:



Lerner Publishing Group 1999. What happens when a new and different species of plant or animal is introduced into an ecosystem? This book provides an answer to that question by examining a variety of these “exotic” species and their impacts on their new homes.

- Exotic Invaders: Killer Bees, Fire Ants, and Other Alien Species are Infesting America! *Lesinski, Jeanne M.* ISBN 0802783902. Publisher: Walker & Company 1996. Describes five species that are not native to North America—the sea lamprey, fire ants, zebra mussels, European starlings, and African honey bees—and efforts to handle the problems their introduction has caused.
- Plant Invaders. *Souza, Dorothy M.* ISBN 0531162478. Publisher: Watts Franklin. 2004. The book discusses nonnative plants, such as the kudzu vine and the tree-of-heaven, which were imported from other countries and now pose a significant threat to the ecosystems of North America.

### Lesson Objective(s)

Students will be able to:

1. Know the characteristics of a native plant
2. Know the characteristics of a non-native (alien) plant
3. Explain the importance of planting native species

### Materials/Resources

- World Map
- Garden flowers’ photos
- Plant field guide for your area
- List (with photos) of common alien species in your area

### Essential Question(s)

- What is a native plant?
- What is a non-native (alien) plant?
- Why is important to plant native plants?

### Activating Strategy

Start by asking the students:

- Who has a flower garden at home?
- What kinds of flowers (species) are in your garden?
- Did you know that not all plants (species) in the garden are local?

Show a world map and have pictures of different garden flowers and ask the class where they think the flowers are from. Here are some examples:

Tulips: Europe  
Black-eyed Susan: North America  
Daffodils: North Africa  
Rose of Sharon: Asia  
Bleeding hearts: North America

Next define with the students’ native and non-native (alien) species:

- o **native plant species:** A species that grows naturally in an area.
- o **alien species:** A species that is introduced to an area

Explain that when first introduced to a new area, these new plants are not harmful. They become harmful as they use up the food, water, and space, leaving little for the native plants.

#### Procedure

1. Take the class to an outdoor space and explain to them they are going to explore with field guides to take note of what plants in the area are native and which are alien.
2. Distribute field guides and ask students to walk around in pairs and have each pair make a list of native and alien species they find.
3. Next have students go to a space with access to computers or tablets and tell them they are going to conduct a mini-research project. (Project worksheet and guidelines included)
4. After giving each pair adequate time to complete their project (this may take a couple of consecutive days in class), each pair will present to the class (Presentation Rubric in Appendix).

#### Closure (Reflection)

Ask students to share:

1. How they look at plants differently
2. What they have learned about native and alien species

**Assessment:** Research project presentation

**Extension:** Organize a local flower species planting activity (in school garden, or in biodegradable cups to take home to plant). While talking to the kids about native and non-native species, provide specific examples of plants that are from your area. Make sure that the species used in the hands-on planting project is one of the native species.

# **ALIENS** on EARTH

## Mini-Research Project

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In partner pairs,  
FIRST – write down your observations from outside:

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SECOND, use your technology to find answers to the following questions:

1) How did alien species get to our community?

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2) How do alien species create problems locally?

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3) How do alien species create problems globally?

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4) How can we prevent the spread of alien species?

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THIRD, Take all of your information and create a presentation on alien species using your technology (Glogster, Prezi, VoiceThread, or PowerPoint are all options). GOOD LUCK! 😊

Effectively Using the Outdoor Classroom  
Elementary Curriculum for Interdisciplinary Studies

FIRST GRADE

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**"My Pet Tree" (\*This lesson needs to be done in the fall)**

**UNIT:** Plants (Science) & Measuring (Math)

**Unit Essential Questions:**

1. What characteristics define a species?
2. How do I collect data over time?

**LESSON:** Adopting a pet tree

**STANDARDS ADDRESSED**

(South Carolina State Science Standards)

Standard 1-2: The student will demonstrate an understanding of the special characteristics and needs of plants that allow them to survive in their own distinct environments. (Life Science)

Indicators

- 1-2.1 Recall the basic needs of plants (including air, water, nutrients, space, and light) for energy and growth.
- 1-2.2 Illustrate the major structures of plants (including stems, roots, leaves, flowers, fruits, and seeds).
- 1-2.3 Classify plants according to their characteristics (including what specific type of environment they live in, whether they have edible parts, and what particular kinds of physical traits they have).
- 1-2.4 Summarize the life cycle of plants (including germination, growth, and the production of flowers and seeds).
- 1-2.5 Explain how distinct environments throughout the world support the life of different types of plants.
- 1-2.6 Identify characteristics of plants (including types of stems, roots, leaves, flowers, and seeds) that help them survive in their own distinct environments.

(National Common Core State Standards - Math)

Measurement and Data 1.MD: Measure lengths indirectly and by iterating length units.

1. Order three objects by length; compare the lengths of two objects indirectly by using a third object.
2. Express the length of an object as a whole number of length units, by laying

multiple copies of a shorter object (the length unit) end to end; understand that the length measurement of an object is the number of same-size length units that span it with no gaps or overlaps.

Tell and write time.

3. Tell and write time in hours and half-hours using analog and digital clocks.

Represent and interpret data.

3. Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another.

(South Carolina State Math Standards)

Standard 1-6: The student will demonstrate through the mathematical processes a sense of collecting, organizing, and interpreting data and of making predictions on the basis of data.

Indicators

- 1-6.1 Use survey questions to collect data.
- 1-6.2 Organize data in picture graphs, object graphs, bar graphs, and tables.
- 1-6.3 Interpret data in picture graphs, object graphs, bar graphs, and tables by using the comparative terms *more*, *less*, *greater*, *fewer*, *greater than*, and *less than*.
- 1-6.4 Predict on the basis of data whether events are *likely* or *unlikely* to occur.

Guiding Questions:

1. What trees grow in our community and what about them makes them unique?
2. How do I study something over time?
3. How do I best show information I have collected?

Associated Reading Materials:

- Crinkleroot's Guide to Knowing the Trees. *Arnosky, Jim*. ISBN 0027058557. Publisher: Simon & Schuster. 1992. An illustrated introduction to trees and woodlands with information on how to identify the bark and the leaves, the many ways that animals use trees, and how to read the individual history that shapes every tree.
- My Favorite Tree: Terrific Trees of North America. *Iverson, Diane*. ISBN 1883220939. Publisher: Dawn Publications. 1999. Trees are important in children's lives. This book celebrates the joy children feel as they interact with their favorite tree in their own unique way. For older children, separate text is included that features an overview of each tree's traits, associated wildlife companions, and role in the web of life.
- Take a Tree Walk. *Kirkland, Jane*. ISBN 0970975414. Publisher: Stillwater Publishing. 2002.

An interactive self-guided odyssey in search of the wonder of trees. With book in hand, kids head out to their backyard, schoolyard or local park to find and identify trees.

- Sky Tree: Seeing Science Through Art. *Locker, Thomas*. ISBN 0064437507. Publisher: Harper Collins. 1995. A tree stands on a hill by a river. As the sky changes, so does the tree, its branches filling with clouds, stars, snow, birds, mists, and the golden spring sun. One tree can mean many things.
- Have You Seen Trees? *Oppenheim, Joanne*. ISBN 0590466917. Publisher: Scholastic Inc. 1995. The rhythmic language and lush paintings of this joyful poem celebrate the varied characteristics of trees – from young to old, short to tall and throughout the seasons.
- A Tree is Nice. *Udry, Janice May*. ISBN 0064431479. Publisher: Harper & Row. 1956. An older book with a simple message, A Tree is Nice describes the importance of trees to people and to wildlife. Most children will be able to relate personal experiences to the story.

### Lesson Objective(s)

Students will be able to:

1. Know the characteristics of their chosen tree
2. Describe how to conduct a long-term study
3. Explain how trees grow and change over time

### Materials/Resources

(EACH STUDENT WILL NEED)

- Notebook
- Pen
- Material to tag tree with (ribbon, string, etc.)
- Camera (optional)

### Essential Question(s)

- What defines a tree?
- How do you keep track of information over time?
- How do trees change over time?

### Activating Strategy (\*This lesson needs to be done in the fall)

1. Gather children in a circle outdoors and start a discussion about trees.
2. Ask questions such as: “What’s special about trees? What gifts do trees give?”
3. Introduce a poetry reading and give children questions to think about while they listen to the poems. (Poems Included)
4. Next, invite students to walk around and pick a tree they would like to study for one year. It should be a tree close to the school that they can visit once a month. Once their tree is picked, asked them to tag it with a certain color ribbon, string, or tag ID marker.

### Procedure

## TreesGreenville Companion Curriculum: Elementary Level

1. Once students have picked their tree and returned to the circle, ask: "I understand that you have each chosen a tree you have become friends with. How did you choose which tree you wanted?"
2. Ask students to get out their notebook and write down the date and a few words that describe their tree. Tell them they will be making a diary of the tree's life for the year.
3. Pass out cameras (or have cameras for small groups to share) and ask them to go back to their tree and take a picture (or have students draw a picture). These can be printed and included in the first diary entry.
4. Next use field guides and help students to begin to identify what kind of tree theirs is. Ask them to look closely at the tree's bark, leaves, any fruits or nuts, etc.
5. For a math focus, in addition to words describing their tree, possibly ask students to make a few measurements and write them down.
6. For the next year, visit the tree at least once a month. Each time you visit, have students make notes in their diary about what is happening in the life of the tree. Can you see signs of growth? Does the tree lose its leaves in winter? Does it produce flowers, berries, seed pods, or nuts? Does the tree ever show signs of stress, such as wilting leaves from lack of rain or damage from frost? Do animals make homes in your tree? Add a new picture of the tree each time you visit, too.
7. At the end of the year, the kids will have a complete report of their tree's life and growth.

### Closure (Reflection)

Ask students to share:

1. How a tree changes over time
2. What they have learned about their tree
3. What they have learned about collecting information over time

### Assessment: Tree Diary

**Extension:** Organize a tree planting activity (in school garden, or in biodegradable cups to take home to plant). As a companion to the alien species lesson, make sure that the species used in the hands-on planting project is one of the native species.

## Sample Poems about Trees

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### Pear Tree

by H. D.

Silver dust  
lifted from the earth,  
higher than my arms reach,  
you have mounted.  
O silver,  
higher than my arms reach  
you front us with great mass;

no flower ever opened  
so staunch a white leaf,  
no flower ever parted silver  
from such rare silver;

O white pear,  
your flower-tufts,  
thick on the branch,  
bring summer and ripe fruits  
in their purple hearts.

### Vertical

by Linda Pastan

Perhaps the purpose  
of leaves is to conceal  
the verticality  
of trees  
which we notice  
in December  
as if for the first time:  
row after row  
of dark forms  
yearning upwards.  
And since we will be  
horizontal ourselves  
for so long,  
let us now honor  
the gods  
of the vertical:  
stalks of wheat

which to the ant  
must seem as high  
as these trees do to us,  
silos and  
telephone poles,  
stalagmites  
and skyscrapers.  
but most of all  
these winter oaks,  
these soft-fleshed poplars,  
this birch  
whose bark is like  
roughened skin  
against which I lean  
my chilled head,  
not ready  
to lie down.





# **SECOND GRADE**

Effectively Using the Outdoor Classroom  
Elementary Curriculum for Interdisciplinary Studies

SECOND GRADE

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**“Graphing in the Great Outdoors”**

**UNIT: Graphing**

**Unit Essential Questions:**

1. How do I represent data graphically?
2. How can visual graphics give me information?

**LESSON: Graphing data collected**

**STANDARDS ADDRESSED**

**(National Common Core State Standards – Math)**

Represent and Interpret Data 10.MD: Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems using information presented in a bar graph

**(South Carolina State Math Standards)**

Standard 2-6: The student will demonstrate through the mathematical processes an understanding of creating questions to collect data, organizing data, describing trends of a data set, and making predictions based on data.

**Indicators**

2-6.1 Create survey questions to collect data.

2-6.2 Organize data in charts, pictographs, and tables

**(South Carolina Physical Education Standards)**

Standard 1: The student will demonstrate competence in motor skills and movement patterns needed to perform a variety of physical activities. (Psychomotor Domain)

**Indicators**

2-1.1 Demonstrate mature form in locomotor skills (including walking, running, jumping, hopping, galloping, sliding, skipping, and leaping).

2-1.2 Use smooth transitions between combinations of locomotor skills and combinations of manipulative patterns (for example, from walking to running, galloping to skipping, catching to throwing).

**Guiding Questions:**

1. How do I best represent data?

2. What can graphs show me?

Associated Reading Materials:

- Tally O'Malley. *Stuart Murphy and Cynthia Jabar*. ISBN 0060531649. Publisher: HarperCollins. 2004. The O'Malleys are off to the beach! But it's a long, hot, boring drive. What can Eric, Bridget, and Nell do to keep busy? Play tally games, of course -- counting up all the gray cars or green T-shirts they see. Whoever has the most marks at the end wins the game. Eric wins the first game. Bridget wins the second. It seems like poor Nell will never win a game! But Nell has the luck of the Irish on her side, and a surprise in store for her big brother and sister.
- Lemonade for Sale. *Murphy, Stuart J.* ISBN 0060274409. Publisher: HarperCollins. 1998. Everyday activities such as sharing a meal, sorting socks and getting ready for school can be part of learning math. In the MathStart Series, everyday life is the basis for each entertaining story. Simple math concepts are embedded in each story so that young children intuitively understand them. Adults can use the creative suggestions for activities in the back of each book to extend learning opportunities with children.
- The Great Graph Contest. *Leedy, Loreen*. ISBN 0823420299. Publisher: Holiday House Publishing. 2006. Two comical creatures go crazy with graphs in an imaginative look at organizing information. Young readers can learn about bar graphs, pie charts, Venn diagrams, and more. Details about how each graph was made are shown at the end plus instructions for students to make their own.
- Who's Got Spots? *Williams Aber, Linda*. ISBN 1575650991. Publisher: Kane Press. 2000. Kip takes a survey and organizes his data using tallies and graphs to forecast whether chicken pox will keep him and his friends out of the Autumn fest. Math concept: organizing data.

Lesson Objective(s)

Students will be able to:

1. Know how to create a simple graph
2. Understand how to use information from a graph or chart to answer questions

Materials/Resources

- Chalk
- Yardstick or measuring wheel
- Graph paper
- At least 5 stopwatches
- Paper and clipboards (or notebooks)

Essential Question(s)

- How are simple graphs created?
- How do you use graphs or charts to get information?

### Activating Strategy

The day you are starting this lesson, tell students that they are going to be using some time outdoors for races. Tell them that they will be racing against themselves, not others! Take them outside first thing in the morning and mark 50 yards on a sidewalk or outdoor classroom with chalk.

### Procedure

1. Grab the stopwatches and notebooks, and head outside to the playground. If you haven't already done so, this is a good time to review behavioral expectations for the class. Many of them may not be used to conducting class out on the playground!
2. Assign five student timers. These student timers will stand at the end of the 50 yard race, while you'll be with the rest of the students at the starting line. These five timers need not worry; they will also run the race, but they will be timing their classmates first.
3. Divide students into five lines at the starting line. Five students (the first student in each line) will run the race at the same time, listen to the student timer tell them their time, and then come back to the starting line with you to record their information.
4. Have students run the races and then record their time.
5. Allow the five student timers run while five other students time them. Make sure that everyone records their information and keeps it in a safe place.
6. Do this every day, for one week.
7. At the beginning of the following week, pull out the graph paper. Have students help you set up the horizontal and vertical axes. One axis should have the days of the week (Monday, Tuesday, etc.) and the other axis should have time. You will need to discuss with students the increments of time that should go along this axis - One second for each square? Two seconds? Five seconds? It will depend on what their times are.
8. At this point, you will want to talk with your students about the different purposes of different types of graphing. While a bar graph and line graph are often used for representing the same data, a line graph is a more logical choice for showing data that change over time.
9. Have students complete their graphs independently, but pull students you observe struggling. Provide some additional assistance in the means of small group review or pairing them with another student who has finished their graph and is willing to help.

### Closure (Reflection)

Ask students to share:

1. How a graph shows information
2. What they have learned about graphing

## TreesGreenville Companion Curriculum: Elementary Level

**Assessment:** As an optional homework assignment, have students choose a distance at home to run, and have them record their results over time to see if they get faster. Use the students' completed bar graphs to assess their learning.

**Extension:** Take students outside on a walk and using the graph skills that they have learned, have them collect data (and then graph) the number of the different colors they see.

## Effectively Using the Outdoor Classroom

### Elementary Curriculum for Interdisciplinary Studies

#### SECOND GRADE

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#### “Mouse House”

**UNIT:** Animals & Their Habitat

**Unit Essential Questions:**

1. What different types of animal habitats are there?
2. How do animals interact with their environment?

**LESSON:** Building an animal habitat

#### STANDARDS ADDRESSED

(South Carolina State Science Standards)

**Standard 2-2:** The student will demonstrate an understanding of the needs and characteristics of animals as they interact in their own distinct environments. (Life Science)

**Indicators**

- 2-2.3** Explain how distinct environments throughout the world support the life of different types of animals.
- 2-2.4** Summarize the interdependence between animals and plants as sources of food and shelter.

**Guiding Questions:**

1. What do animals need to survive?
2. How do animals interact with their habitat?

**Associated Reading Materials:**

- The Bee Tree. *Buchmann, Stephen*. ISBN 0938317989. Publisher: Cinco Puntos Press. 2007. In the Malaysian rainforest, a young boy tells how he replaced his grandfather as the one responsible for harvesting honey from the giant tualang tree. The boy recounts the legend his people have told about the honey bees' relationships with the tualang tree.
- Castles, Caves, and Honeycombs. *Ashman, Linda*. ISBN 0152022112. Publisher: Harcourt Children's Books. 2001. Many places can make a home--a silent cave, a secret den, a silky web, even a sticky honeycomb. Each one is safe and snug and just right for the families who live there. Linda Ashman's spare, lyrical text and Lauren Stringer's sumptuous paintings invite you to explore some of these wonderful homes and see how different--yet alike--they can be.

**Lesson Objective(s)**

Students will be able to:

1. Explain how different habitats support different types of animals

2. Describe how animals and their habitat interact with each other

#### Materials/Resources

- Small pieces of cardboard (for each student or small group)
- Basket or bag for collection of materials

#### Essential Question(s)

- What needs and wants do animals have?
- How do local animals find shelter?

#### Activating Strategy

Ask the students what they think the differences are between “needs” and “wants.”  
What do we “need” to survive as humans?

Explain that most of the things we have are “wants” and not “needs”. Ask the students what they think animals need to survive. Are these things similar to what humans need? Are there differences?

Give a short presentation to the class on animal habitats. Explain that an animal’s habitat includes adequate food, water, shelter and cover, and space. Tell the students that today you will be focusing on the “shelter and cover” aspect of habitats.

#### Procedure

1. Take students to an outdoor classroom/area.
2. Discuss with the students how animals are suited to live in their environment. How they deal with seasons (fur/hibernating, migrating, etc.)
3. Tell the students they are going to pretend to be a mouse and use nature’s materials to create a home. Let them work individually, with partners, or in small groups depending on what is best for the class.
4. Give students a small piece of cardboard to act as the base (what would be the earth or ground for a mouse) and ask students to build a "mouse house" from materials found in the area. Breaking of sticks is not allowed nor is removing plant material from a living plant. The mouse house built should be about the size of their fist.
5. After the homes are built, have students share their creature creation with the class and explain such items as what materials they chose to use and why and how they constructed their house.

#### Closure (Reflection)

Ask students to share:

1. What they have learned about how animals make their home
2. How they think they would do if they had to build their own home

**Assessment:** Mouse House creation

**Extension:** Use this lesson as an introduction to larger unit on animal habitats to hook their interest or as a summary and reflective activity at the end of a habitat unit to show and share what they have learned.



Effectively Using the Outdoor Classroom  
Elementary Curriculum for Interdisciplinary Studies

SECOND GRADE

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**“Environmental Exchange Box”**

**(This activity requires planning with another school in a different geographic location)**

UNIT: Community Understanding

Unit Essential Questions:

1. What makes a community unique?
2. How do communities around the state (or around the world) compare?

LESSON: My Community

STANDARDS ADDRESSED

(South Carolina State Social Studies Standards)

Standard 2-2: The student will demonstrate an understanding of the local community and the way it compares with other communities in the world.

Indicators

- 2-2.1 Locate on a map the places and features of the local community, including the geographic features (e.g., parks, water features) and the urban, suburban, and rural areas.
- 2-2.2 Recognize characteristics of the local region, including its geographic features and natural resources.
- 2-2.4 Summarize changes that have occurred in the life of the local community over time, including changes in the use of the land and in the way that people earn their living there.
- 2-2.5 Compare the history and features of the local community with those of different communities around the world.

Guiding Questions:

1. What is unique about my community?
2. How has my community changed over time?
3. How does my community compare to those around the state? Around the world?

Associated Reading Materials:

- The Country Noisy Book. *Wise Brown, Margaret*. ISBN 0060208104. Publisher: HarperCollins Childrens Books. 1994. A little dog goes to the country and hears the sounds of donkeys, squirrels, turkeys, owls, crickets, pigs, and frogs.
- The Noisy Book. *Wise Brown, Margaret*. ISBN 059061729X. Publisher: Scholastic Publications. 1995. Muffin the dog is blindfolded for a day and tries to identify things by

the sounds they make.

- I Took A Walk. Cole, Henry. ISBN 0688151159. Publisher: Greenwillow Publishing. 1998. Have you ever sat quietly near a stream, or in a meadow or a wood, and just looked and listened? Well, now is your chance-come walk with Henry Cole in this delightful follow-up to Jack's Garden. Vibrant, die-cut flaps fold out, inviting young viewers to observe the many forms of wildlife and plants found on land and in the water. Turn the pages for an interactive and fun exploration into nature. You'll be surprised by how much you see!

### Lesson Objective(s)

Students will be able to:

1. Know unique facts about their community
2. Describe unique facts about a community outside their own
3. Explain how their community has changed over time

### Materials/Resources

- Information about the natural history of your region
- Drawing paper
- Markers and other art supplies
- Digital camera and/or voice recorder (optional)
- Box

### Essential Question(s)

- What defines our community?
- What is the natural environment like in our community?
- What is the culture like in our community?
- How has our community changed over time?

### Activating Strategy

Ask students what is special about their region. Give an example of one thing you think is special about their region.

### Procedure

1. Tell students that they are going to make and exchange boxes with information about their region with another group of students.
2. Explain that the other students may not know very much about your region, so it is their responsibility to put things in the box that will give them good information about your region.
3. Brainstorm list of items to include in box. It might be a good idea to show the size of the box so they know what will and will not fit.
4. Have students divide up responsibilities for researching, collecting, and preparing materials on list.
5. Activity: To help make and gather materials, take students outside to collect items from nature, take photos, make drawings, etc. (This can be spread out over many class periods if necessary.)

6. As a closure to the activity, discuss what they expect will be in the box from the other students

\*Here are some ideas of what to include in the box:

- Brief description of your region written by students
- Collage of pictures of local ecosystems
- Drawings of interesting local plants and animals
- Photographs of the school, classroom, and class.
- A video of local ecosystems (forest, beach, river, school, village/city, etc.)
- Sound recordings of local ecosystems (birds, the tide, trains, tractors, etc.)
- Oral reports given by students on various topics.
- Stories written by students about their favorite things to do and places to go.
- Samples of regional foods and spices (make sure you can send them by mail)
- Representative natural objects like pressed tree leaves, nuts, cones, pressed plants and flowers, rocks, shells, sand/dirt in bags or old camera film containers, etc.
- Descriptions and pictures of regional cultural events and celebrations.
- Field guides, prepared by students, about all the trees/flowers/animals/etc. in their area
- Description of local environmental issues and news articles about the issue.

**PART TWO (When exchanged box is received)**

1. Ask students what they know about the region you are receiving the box from (major cities, geographical landmarks, climate, etc.). If students really know nothing, be prepared with some basic information.
2. Activity: Open box and examine contents. Compare what you sent to what you received (climates, animals and plants, cultural events, etc.). What is similar/different? What did you like most/least about the box you received? What would it be like to live there? How informative was the box? How well did the box represent the ecological or cultural environment of the region? E
3. Cool Down/Wrap Up: Discuss if what they expected to receive matches what they actually received in the box from the other students.

**Closure (Reflection)**

Have students write down their impressions of items in the box and draw a picture of their favorite part of the other region or a scene from that region.

**Assessment:** Journal reflection on contents sent and/or received

**Extension:** Write a short thank you note to the other class describing their impression of the box and what they liked best about it. Have them also make up and include a list of questions (that were not already answered) about the box or the region.

# THIRD GRADE

## Effectively Using the Outdoor Classroom

### Elementary Curriculum for Interdisciplinary Studies

#### THIRD GRADE

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#### **“Hide and Go Seek”**

**UNIT:** Animal Adaptations

**Unit Essential Questions:**

1. What characteristics define a species?
2. How do species use their adaptations to survive?

**LESSON:** Animal Coloration

#### **STANDARDS ADDRESSED**

(South Carolina State Science Standards)

**Standard 3-1:** The student will demonstrate an understanding of scientific inquiry, including the processes, skills, and mathematical thinking necessary to conduct a simple scientific investigation

**Indicator: 3-1.3** Generate questions such as “what if?” or “how?” about objects, organisms, and events in the environment and use those questions to conduct a simple scientific investigation.

**Indicator 3-1.4** Predict the outcome of a simple investigation and compare the result with the prediction.

**Standard 3-2:** The student will demonstrate an understanding of the structures, characteristics, and adaptations of organisms that allow them to function and survive within their habitats. (Life Science)

**Indicator: 3-2.2** Explain how physical and behavioral adaptations allow organisms to survive (including hibernation, defense, locomotion, movement, food obtainment, and camouflage for animals and seed dispersal, color, and response to light for plants).

**Guiding Questions:**

1. What characteristics make animals unique?
2. How does an animal’s coloring help them survive?
3. How do I investigate animal adaptations?

**Associated Reading Materials:**

- Extreme Animals. *Davies, Nicola*. ISBN 0763641278. Publisher: Candlewick Press. 2009. From the persevering emperor penguins of the South Pole to the brave bacteria inside bubbling volcanoes, from the hardy reptiles of the driest deserts to the squash-proof creatures of the deepest sea beds, animals have adapted to survive in conditions that would kill a human faster than you can say "coffin." Discover how they do it in this amazing

natural history book from a celebrated team — and find out who wins the title of the toughest animal of them all.

- Voices from the Wild - An Animal Sensagoria. *Bouchard, David*. ISBN 0811814629. Publisher: Chronicle Books. 1996. Describes how animals use their senses to survive in the wild. The book is divided into five sections - sight, smell, touch, hearing, and taste. Each section features five animals relating the special ways in which a particular sense helps them to hunt, avoid predators, and care for their young.

### Lesson Objective(s)

Students will be able to:

1. Define animal adaptation
2. Describe how an adaptation can help an animal survive
3. Explain how an investigation on animal adaptations can be done

### Materials/Resources

- Paper cutouts of a white polar bears, green frogs, and butterflies (for coloring)
- Crayons, Colored Pencils, or Markers

### Essential Question(s)

- What is an animal adaptation? What are examples of animal adaptations?
- How does animal coloration help an animal survive?

### Activating Strategy

Talk to the students about animal adaptations. Ask them to give examples of adaptations that they know about.

### Procedure

1. Take students to an outdoor classroom or learning environment.
2. Give each student a white polar bear and a green frog to go out and place in their habitat. Students are then asked to locate all frogs and bears. If your environment is mostly green, the frogs should be the hardest to locate (protective coloration).
3. After a certain amount of time, ask students to return to a central location and discuss how coloration helps animals.
4. Second, have each student color two butterflies exactly alike. Then ask them to place one butterfly on plants, in a tree, or on the ground. The second set of butterflies is distributed to the class. Each student must locate the butterfly matching his/hers. After an allotted amount of time, again bring the class back to a central location and have them discuss the importance of the adaptation of coloration for animals.

### Closure (Reflection)

Ask students to share:

1. How animals depend on their adaptations to survive

2. What they have learned about animal adaptations

**Assessment:** Participation in the activity

**Extension:** Have students research other animals whose adaptations help them to survive

**Effectively Using the Outdoor Classroom**

Elementary Curriculum for Interdisciplinary Studies

THIRD GRADE

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**"Food Chains"**

**UNIT:** Habitats

**Unit Essential Questions:**

1. What role do organisms play in a habitat?
2. What eats what in a habitat?

**LESSON:** Food Chains

**STANDARDS ADDRESSED**

(South Carolina State Science Standards)

Standard 3-2: The student will demonstrate an understanding of the structures, characteristics, and adaptations of organisms that allow them to function and survive within their habitats. (Life Science)

Indicator 3-2.5 Summarize the organization of simple food chains (including the roles of producers, consumers, and decomposers).

**Guiding Questions:**

1. What is a producer? Consumer? Decomposer?
2. What is a food chain?

**Associated Reading Materials:**

- The Magic School Bus Gets Eaten: A Book About Food Chains. *Relf, Pat.* ISBN 0590484141. Publisher: Scholastic. 1996. It's beach day, and the whole class is excited. Everyone except Arnold and Keesha, that is. They forgot their report on two beach things that go together. All Arnold and Keesha have is a tuna fish sandwich and some smelly green pond scum. What could those two things possibly have in common? "The best way to learn about something is to jump right in," Ms. Frizzle announces. A second later the bus dives right into the ocean! Come on an underwater adventure and learn about food chains.
- Hey Diddle Diddle: A Food Chain Tale. *Kapchinske, Pam.* ISBN 1607181401. Publisher: Sylvan Dell. 2011. Sing along to this light-hearted romp while learning about different food chains within a single ecosystem. Which animals come out on top, and which animals end up as snacks? Hey Diddle Diddle teaches children about the food web, the circle of life, and the part that each living creature plays within an ecosystem. This book is so much fun; kids will have a hard time believing they're actually learning. You'll be singing Hey Diddle Diddle



long after you close the book.

- What's on the Food Chain Menu? *Lundgren, Julie K.* ISBN 1617419478. Publisher: Rourke. 2011. Introduces habitats and how they provide everything the creatures living in them need, including how different parts of the food chain contribute.

### Lesson Objective(s)

Students will be able to:

1. Define a food chain
2. Describe how a food chain works
3. Explain the roles different organisms play in a food chain

### Materials/Resources

- Notebook
- Pen
- Index cards with food chain elements written (or pictured) on each

### Essential Question(s)

- What is a food chain?
- How does a food chain work?
- What is a producer? Consumer? Decomposer?

### Activating Strategy

Ask students to describe what they ate for breakfast. Then ask them what their breakfast would have eaten when alive. Describe that this is an example of a simple food chain. Ask them what else they may know about food chains. As part of this discussion, try to follow one or more of the foods on the board through the food chain. For example, sun → corn → cow → people.

All the food chains we will be dealing with in this class have the sun as the initial energy source.

### Procedure

1. As an activity, students will build a food chain.
2. Take students outside and give each student a card with a picture of an animal, plant, or sun in a habitat's food chain.
3. Students must not tell what they are (card they have), but through questioning their classmates, place themselves next to something they would need or eat in the food chain.
4. An example of parts of a food chain: sun, trees, beaver, hare, white tail deer, wolves; There can be more than one of each member of the chain
5. Give students an allotted time to get in place and then check their position by letting them call out what they are and have them self-check as you help them also

## TreesGreenville Companion Curriculum: Elementary Level

6. To close, ask students to venture out and take a nature walk – tell them to look for signs of food chains outdoors. For instance, look for animal scat, insect marks on leaves, and animals foraging. Have them return and share anything they found.

### Closure (Reflection)

Ask students to share:

1. Why each part of a food chain is important
2. What the different roles organisms play in a food chain

### Assessment: Activity Participation

**Extension:** Ask students to pick an ingredient from their lunch and construct a food chain.

Remind them to make sure to start with the sun and include themselves. Ask students to identify the role of each organism (producer, herbivore, omnivore, etc.).

## Effectively Using the Outdoor Classroom

### Elementary Curriculum for Interdisciplinary Studies

#### THIRD GRADE

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#### **“Making Paper”**

##### UNIT: State History

##### Unit Essential Questions:

1. How did the natural environment shape the development of our state?
2. How does the economy depend on the natural resources?

##### LESSON: Making Paper

##### STANDARDS ADDRESSED

##### (South Carolina State Social Studies Standards)

Standard 3-5: The student will demonstrate an understanding of the major developments in South Carolina in the late nineteenth century and the twentieth century.

##### Indicators

3-5.1 Summarize developments in industry and technology in South Carolina in the late nineteenth century and the twentieth century, including the rise of the textile industry, the expansion of the railroad, and the growth of the towns.

##### Guiding Questions:

1. What natural resources impacted the development of our state?
2. How does the economy depend on natural resources?

##### Associated Reading Materials:

- The South Carolina Colony. *Cunningham, Kevin*. ISBN 0531266117. Publisher: Children’s Press. 2011. An illustrated introduction to trees and woodlands with information on how to identify the bark and the leaves, the many ways that animals use trees, and how to read the individual history that shapes every tree.

##### Lesson Objective(s)

Students will be able to:

1. Describe how natural resources are important to the state’s economy
2. Explain how trees are significant as a natural resource

##### Materials/Resources

- Paper Making supplies (listed below in activity directions)

##### Essential Question(s)

- What natural resources are important to the state's economy? Now? In history?
- Why are trees significant as a natural resource?

### Activating Strategy

Ask students to think about why trees are important. Start a list on the board or a giant piece of paper of all the class' ideas. Share "Tree Facts" (included).

### Procedure

Since paper will surely come up as an answer during the activating strategy, let students know that one of the best ways to conserve trees for paper and other needs is to recycle the paper we have. Take students outside to conduct the following activity in directing the students to making their own paper: (Student Version Included)

1. Take newspaper, office paper, construction paper, or cardboard - tear or shred into small pieces
2. Add water to the paper pieces - mix with blender, food processor, or mixer (Let mixture set for a day or two)
3. Pour pulp into large deep pan
4. Dip paper making mold (picture frame with screen stapled over it) screen side up and pull up slowly - allow the natural vacuum to pull water down through pulp
5. Lay paper mold pulp side down on blotter and blot back of screen with a sponge to pick up all water while pushing down on frame
6. Pick up frame - careful to leave the new sheet of paper on blotter
7. Allow to dry - Air dry several hours (heat of sun, hair dryer, or iron)
8. Trim paper or leave edges frayed

### Closure (Reflection)

Ask students to share:

1. The importance of saving our natural resources
2. What they have learned about how natural resources shape our history

### Assessment: Activity Participation

**Extension:** Have students research other elements of nature that are important now, or in the history, of your community or state as well as how to best preserve them for future generations.

# TREE FACTS

The wood from a 100-foot tree keeps the average American supplied for a year with newspaper, books, magazines, tissues, housing materials, furniture, fences, boxes, and other assorted wood products. On the average that 100-foot tree produces:

- 613 lbs of paper products or
- 200 square feet of one-inch thick lumber or
- 87 square feet of plywood or
- 59 square feet of insulation board, particle board, and hardboard

Vital statistics for that 100-foot tree:

- 18 inches in diameter at the base
- crown spread of 60-70 feet
- weighs about 4,100 lbs at harvest
- grew 200,000 leaves @120 lbs per year or 3,600 lbs over its lifetime
- 1,300 lbs of roots (an additional 2,000 lbs were grown and discarded)
- 100 lbs of nutrients are retained in the wood (twice that amount was returned to the soil)



Record setting trees:

- Oldest- 5,000-6,000 year old Bristle Cone Pine
- Tallest and Largest- Redwood and Sequoia- over 325 feet tall, 2,000 to 3,000 years old

Sit back and look at your surroundings and count the number of objects that contain wood. Trees are a renewable resource that influence our everyday lives.

Source: North Carolina Stewardship Program

## Make your own Recycled Paper!



1. Tear or shred paper into small pieces.



5. Pull up slowly- allow vacuum to pull water down through pulp.



2. Add water and use blender, food processor or mixer to create a mushy pulp.



6. Lay mold, pulp side down, on blotter. Blot back of screen with a sponge to pick up all water while pushing down on frame



3. Pour pulp into large deep pan



7. Pick up frame- careful to leave new sheet of paper on blotter



4. Dip paper making mold (picture frame with screen stapled over it) screen side up.



8. Allow to dry- Air dry several hours, or use a hair dryer, or iron it

# FOURTH GRADE

Effectively Using the Outdoor Classroom  
Elementary Curriculum for Interdisciplinary Studies

FOURTH GRADE

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**“Diversity Detectives”**

**UNIT:** Spaceship Earth

**Unit Essential Questions:**

1. What makes Earth a unique planet in the Solar System?
2. What diversity is included in all of the different environments on earth?

**LESSON:** Community Diversity

**STANDARDS ADDRESSED**

(South Carolina State Science Standards)

Standard 4-2: The student will demonstrate an understanding of the characteristics and patterns of behavior that allow organisms to survive in their own distinct environments. (Life Science)

Indicators

- 4-2.1 Classify organisms into major groups (including plants or animals, flowering or nonflowering plants, and vertebrates [fish, amphibians, reptiles, birds, and mammals] or invertebrates) according to their physical characteristics.
- 4-2.2 Explain how the characteristics of distinct environments (including swamps, rivers and streams, tropical rain forests, deserts, and the polar regions) influence the variety of organisms in each.

Standard 4-3: The student will demonstrate an understanding of the properties, movements and locations of objects in the solar system. (Earth Science)

Indicators

- 4-3.1 Recall that Earth is one of many planets in the solar system that orbit the Sun.
- 4-3.2 Compare the properties (including the type of surface and atmosphere) and the location of Earth to the Sun, which is a star, and the Moon.
- 4-3.3 Explain how the Sun affects Earth.
- 4-3.4 Explain how the tilt of Earth’s axis and the revolution around the Sun results in the seasons of the year.

**Guiding Questions:**

1. What diversity in our community makes it unique?



2. How do the unique characteristics of the planet contribute to the diversity in our own community?

**Associated Reading Materials:**

- Nature in the Neighborhood. *Morrison, Gordon*. ISBN 0618352155. Publisher: Houghton Mifflin Company. 2004. Take a stroll through the seasons with naturalist Gordon Morrison as he reveals all of the many plants and animals to be found around one's own neighborhood.
- A Log's Life. *Pfeffer, Wendy*. ISBN 0689806361. Publisher: Simon and Schuster. 1997. After an oak tree falls in the forest, it has another life as a home to a variety of creatures. As it decays over time, it provides food and shelter to porcupines, ants, mushrooms, salamanders, and many others, until it eventually turns into a mound of rich black earth.
- Saguaro Moon: A Desert Journal. *Pratt-Serafini, Kristin Joy*. ISBN 1584690364. Publisher: Dawn Publications. 2002. When her family moves to the Sonoran Desert in Arizona, Megan keeps a nature journal in which she describes the desert, the changes that occur throughout the seasons, and how these affect the plant and animal inhabitants.
- One Small Square: Woods. *Silver, Donald*. ISBN 0070579334. Publisher: Freeman. 1995. Explains how to investigate the plant and animal life found in a small section of the woods.

**Lesson Objective(s)**

Students will be able to:

1. Describe plant diversity of their community
2. Describe animal diversity of their community
3. Explain how the position and tilt of the Earth contribute the diversity of all communities

**Materials/Resources**

- Notebook
- Pen

**Essential Question(s)**

- What is the variety of diversity found in the community?
- How is the variety of organisms in the community adapted to their surroundings?

**Activating Strategy**

Ask students what happens when they go somewhere new – Are they looking outside the car window more closely? Are they paying attention to details more? Tell students they are going to go outside and pretend that the outdoor classroom they had visited several times before is brand new to them.

**Procedure**

## TreesGreenville Companion Curriculum: Elementary Level

Once outside, tell students to pretend they are visitors from outer space, viewing life on Earth for the first time. Their job is to describe, in minute detail, all the life they find, either by words, pictures, or both. Tell students they will take the information they have found and construct an essay on Earth's diversity, just as if they were reporting back to their home planet. (Rubric for Essay in Appendix)

### Closure (Reflection)

Ask students to share how they become more aware of the diversity and abundance of life on Earth through the activity.

### Assessment: Diversity Essay

Extension: Have students present their written essays to class.

## Effectively Using the Outdoor Classroom

### Elementary Curriculum for Interdisciplinary Studies

#### FOURTH GRADE

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#### **“Measuring Diversity”**

##### UNIT: Measurement

##### Unit Essential Questions:

1. How do I collect data over time?
2. How do I best display data I have collected?

##### LESSON: Categorical Counting

##### STANDARDS ADDRESSED

##### (South Carolina Math Standards)

Standard 4-6: The student will demonstrate through the mathematical processes an understanding of the impact of data-collection methods, the appropriate graph for categorical or numerical data, and the analysis of possible outcomes for a simple event.

##### Indicators

- 4-6.1 Compare how data-collection methods impact survey results.
- 4-6.2 Interpret data in tables, line graphs, bar graphs, and double bar graphs whose scale increments are greater than or equal to 1.
- 4-6.3 Organize data in tables, line graphs, and bar graphs whose scale increments are greater than or equal to 1.
- 4-6.4 Distinguish between categorical and numerical data.
- 4-6.5 Match categorical and numerical data to appropriate graphs.
- 4-6.6 Predict on the basis of data whether events are likely, unlikely, certain, impossible, or equally likely to occur.
- 4-6.7 Analyze possible outcomes for a simple event.

##### Guiding Questions:

1. What type graph best represents different data?
2. How can I use data collected to make future predictions?

##### Associated Reading Materials:

- Forest Explorer: A Life-Sized Field Guide. *Bishop, Nic*. ISBN 0439174805. Publisher: Scholastic, Inc. 2004. Depicts in detail several different deciduous forest habitats, with field notes about the insects and animals shown, as well as tips on how to explore a real forest.
- The Mixed-Up Chameleon. *Carle, Eric*. ISBN 0064431622. Publisher: Harper Collins. 1988. A bored chameleon wishes it could be more like all the other animals it sees, but soon decides it would rather just be itself. Cutouts along the edge of the pages display various animals and colors.

- What Do You Do With a Tail Like This? *Jenkins, Steve*. ISBN 0618256288. Publisher: Combining a guessing game with factual tidbits, the text offers an attention-grabbing introduction to animal physiology. This 2004 Caldecott Honor Book explores the many amazing things animals can do with their ears, eyes, mouths, noses, feet, and tails.
- A Walk in the Desert. *Johnson, Rebecca*. ISBN 1575051524. Publisher: Carol Rhoda Books. 2000. Intriguing look at how plants and animals adapt, survive, and thrive in one of the harshest environments on earth. Photos of spring wildflowers and remarkable animal adaptations.
- Bizarre and Beautiful Noses. *Santa Fe Writers Group*. ISBN 1562611860. Publisher: Avalon Travel Publishing. 1993. Marvel at the beauty of an emperor moth's feathered antennae, used to detect the scent of females. Learn how salmon return across the ocean to the stream of their birth by smelling their way home. This book explores the sense of smell in 20 different animals.
- The Hidden Life of the Forest. *Schwartz, David and Dwight Kuhn*. ISBN 0517570580. Publisher: Crown Publishers. 1988. Photographs and text introduce the animals, insects, and plants in a forest.

#### Lesson Objective(s)

Students will be able to:

1. Extend an investigation
2. Describe how to conduct a long-term study
3. Explain how to use graphs to display data

#### Materials/Resources

- Notebook
- Pen

#### Essential Question(s)

- What graphs are best used to display data from a scientific investigation?
- What information can be drawn from graphs?

#### Activating Strategy

Since this can be used as an extension activity from the previous lesson on diversity, start by asking students the types of diversity they found in their investigative search. If the previous activity was not done, briefly talk about the diversity found outdoors in terms of plants and animals.

#### Procedure

1. Take students outside and tell them (whether this is their first or second time exploring the diversity of the campus) that this investigative study will be focused on counting and measuring.

## TreesGreenville Companion Curriculum: Elementary Level

2. Ask students to get out their notebook and write down a list of 5-10 organisms they see walking around.
3. Once the students have list of organisms they see, ask them to take another walk around and count how many times the organism appears that they can observe. (For example, if they notice one black ant, can they find more? For every ant they see they should make a tally and count.
4. Once students have had a chance to tally their organisms, bring them inside to turn their counts into graphs. Go over what graphs are best for what type of information and how best to set a graph up.
5. Ask the students to make predictions about the information they found. For example, why might there be more plants than animals?

### Closure (Reflection)

Ask students to share:

1. Why data collection is important to a science investigation
2. What they have learned about data collection
3. What they have learned about creating graphs

**Assessment:** Completed graphs

**Extension:** Students can combine their diversity essay with data collection for an in-depth presentation on the diversity at the school campus

Effectively Using the Outdoor Classroom  
Elementary Curriculum for Interdisciplinary Studies

FOURTH GRADE

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**“Trees are Tops”**

**UNIT: Plants**

**Unit Essential Questions:**

1. What characteristics define a species?
2. How do different species use other species to survive?
3. What makes one species important in a community?

**LESSON:** The importance of trees in a community

**STANDARDS ADDRESSED**

(South Carolina State Science Standards)

Standard 4-2: The student will demonstrate an understanding of the characteristics and patterns of behavior that allow organisms to survive in their own distinct environments.  
(Life Science)

**Indicators**

- 4-2.1 Classify organisms into major groups (including plants or animals, flowering or nonflowering plants, and vertebrates [fish, amphibians, reptiles, birds, and mammals] or invertebrates) according to their physical characteristics.
- 4-2.2 Explain how the characteristics of distinct environments (including swamps, rivers and streams, tropical rain forests, deserts, and the polar regions) influence the variety of organisms in each.
- 4-2.5 Explain how an organism’s patterns of behavior are related to its environment (including the kinds and the number of other organisms present, the availability of food and other resources, and the physical characteristics of the environment).
- 4-2.6 Explain how organisms cause changes in their environment.

**Guiding Questions:**

1. What organisms depend on trees?
2. How are trees important to a habitat?

**Associated Reading Materials:**

- One Small Place in a Tree. *Brenner, Barbara*. ISBN 068817180X HarperCollins. 2004. This book reveals the fascinating happenings in one small place. The story begins with a bear using a tree as a scratching post, which causes the creation of a large hole that eventually serves as home to a wide variety of forest animals. Brenner makes the science enjoyable

and understandable, and the realistic illustrations provide great visual aid.

- Nuts to You. *Ehlert, Lois*. ISBN 0152050647. Publisher: Harcourt. 1993. A rascally squirrel has an indoor adventure in a city apartment.
- Cactus Hotel. *Guiberson, Brenda*. ISBN 0805029605. Publisher: Holt. 1993. The saguaro cactus is born when a seed is dropped in the shade of a tree. In the one hundred fifty years it takes to reach its full height, it becomes a “hotel” for desert wildlife. When it is two hundred years old, the fifty foot cactus topples and supplies shelter for ground dwellers.
- In A Tree. *Schwartz, David M*. ISBN 1574712195. Publisher: Gareth Stevens Publications. 1999. Children will delight in discovering the inhabitants of a tree in this colorful mystery book. Each organism’s anatomy is revealed through up close observations of one feature and then a large-scale photograph of the entire organism. A wonderful book to stimulate the imagination and sharpen observation skills before a nature hike.
- Amazing Animal Builders. *Tison, Annette and Talus, Taylor*. ISBN 0448215519. Publishers: Penguin Putnam Books. 1989. Describes nests and homes which animals build for themselves.

### Lesson Objective(s)

Students will be able to:

1. Know the importance of trees in a community
2. Describe how certain species rely on trees for survival

### Materials/Resources

- Notebook/Pen
- Magnifying Glasses
- Field Guides

### Essential Question(s)

- What defines a tree?
- How do certain species rely on trees for survival?
- Why are trees important for a community?

### Activating Strategy

From their leafy branches to their tangled roots, trees provide a habitat for a host of plants and animals. Ask students to brainstorm a list of how and why trees are important to them and organisms in nature.

### Procedure

1. Take students outside and ask them to use their magnifying glasses and field guides to closely investigate the trees outside.
2. Ask students to get out their notebook and inventory the plants and animals that live in, on, and around trees.
3. Once they have had a chance to investigate, bring the class back together and discuss what the students found.

**Closure (Reflection)**

Ask students to share:

1. What evidences they found in their investigations of trees
2. What they have learned about the importance of trees in a community

**Assessment:** Activity and Discussion participation

**Extension:** Have students research and create a video on epiphytes (Plants that live on trees).





# **FIFTH GRADE**

Effectively Using the Outdoor Classroom  
Elementary Curriculum for Interdisciplinary Studies

FIFTH GRADE

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**“The Poet Inside Inspired by Outside”**

**UNIT:** Creative Writing

**Unit Essential Questions:**

1. What inspires authors to write?
2. How do I best express my experiences?

**LESSON:** Writing about the world

**STANDARDS ADDRESSED**

(South Carolina State English & Language Arts Standards)

Standard 5-1: The student will read and comprehend a variety of literary texts in print and nonprint formats.

Indicators

5-1.9 Understand the characteristics of poetry (including stanza, rhyme scheme, repetition, and refrain).

Standard 5-5: The student will write for a variety of purposes and audiences. The teacher should continue to address earlier indicators as they apply to more difficult texts.

Indicators

5-5.1 Create informational pieces (for example, book reviews and newsletter articles) that use language appropriate for the specific audience.

5-5.2 Create narratives that have a fully developed plot and a consistent point of view.

5-5.3 Create written descriptions using precise language and vivid details.

5-5.4 Create written pieces (for example, picture books, comic books, and graphic novels) to entertain a specific audience.

**Guiding Questions:**

1. What type of writing best describes my outdoor experiences?
2. How can I write so that my audience understands my experiences?
3. What type of writing best shares the experience of being in nature?

**Associated Reading Materials:**

- Have You Seen Trees? *Oppenheim, Joanne*. ISBN 0590466917. Publisher: William R. Scott Publishers. 1967. A poem that celebrates trees in all their varied glory, from the sun-drenched yellows and greens of fresh buds to the flaming reds of autumn maples, to the brittle, icy blues and whites of winter-coated branches.
- Hello Tree! *Ryder, Joanne*. ISBN 0525673105. Publisher: Lodestar Publishers. 1991. Describes, in simple text and illustrations, some of the unique characteristics of trees.
- Joyful Noise: Poems for Two Voices. *Fleischman, Paul*. ISBN 0064460932. Publisher: HarperCollins Children's Books. 1992. Written to be read aloud by two voices, this Newbery Medal winner is a collection of poems describing the characteristics and activities of a variety of insects.
- Insectlopedia. *Florian, Douglas*. ISBN 0152013067. Publisher: Harcourt, Brace, and Company, 1998. Presents twenty-one short poems about such insects as the inchworm, termite, cricket, and ladybug.
- Old Elm Speaks. *O'Connell George, Kristine*. ISBN 0395876117. Publisher: Clarion Books. 1998. Through enchanting paintings and imaginative, humorous text the author offers a delightfully original look at trees. This book captures trees in various circumstances and throughout the season in short poems, free verse, and haiku.
- There's a Babirusa in my Bathtub! Fact and Fancy About Curious Creatures. *Schur, Maxine Rose*. ISBN 1584691182. Publisher: Dawn Publications. 2008. Contains thirteen poems about unusual animals. Each is accompanied by a description of the real animal and a "fantastic fact" about it, along with full-color illustrations.

### Lesson Objective(s)

Students will be able to:

1. Practice informative, nonfictional writing
2. Experience a variety of writing formats
3. Discuss what elements of nature are easy to write about

### Materials/Resources

(EACH STUDENT WILL NEED)

- Notebook and Pen or pencil

### Essential Question(s)

- What different types of writing can be used to describe something?
- How do I write something for a specific audience
- What details can I use in my writing to have my audience understand what I am writing about?

### Activating Strategy

Introduce the lesson by doing a reading of both a poem and short narrative with nature as the focus. Ask the students to describe what the author was writing about. Have them identify what words or phrases helped them to know what the author was describing.

### Procedure

Take students outside and let them know that they will be using the outdoors to help inspire them to write. Encourage them to free write first and then begin working on their own nature poem. Writing and sharing poems will give students an opportunity to express their thoughts, values, and beliefs about the environment.

### Closure (Reflection)

Ask students to share:

1. How they felt when they wrote and if their feelings were expressed in their words
2. How details help an audience better understand an author's writing
3. What they have learned about writing

### Assessment: Poem

**Extension:** Organize a poetry slam or recital for all of the students to share their poems. If possible, have the poems recited outside (such as in an amphitheater) and possibly invite parents and/or other classes.

Effectively Using the Outdoor Classroom  
Elementary Curriculum for Interdisciplinary Studies

FIFTH GRADE

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**“Living Logs”**

**UNIT: Communities and Habitats**

**Unit Essential Questions:**

1. What different habitats are there in the world?
2. What are characteristics of the different habitats?

**LESSON: A Living Log Community**

**STANDARDS ADDRESSED**

**(South Carolina State Science Standards)**

Standard 5-2: The student will demonstrate an understanding of relationships among biotic and abiotic factors within terrestrial and aquatic ecosystems. (Life Science)

**Indicators**

- 5-2.1 Recall the cell as the smallest unit of life and identify its major structures (including cell membrane, cytoplasm, nucleus, and vacuole).
- 5-2.2 Summarize the composition of an ecosystem, considering both biotic factors (including populations to the level of microorganisms and communities) and abiotic factors.
- 5-2.3 Compare the characteristics of different ecosystems (including estuaries/salt marshes, oceans, lakes and ponds, forests, and grasslands).
- 5-2.4 Identify the roles of organisms as they interact and depend on one another through food chains and food webs in an ecosystem, considering producers and consumers (herbivores, carnivores, and omnivores), decomposers (microorganisms, termites, worms, and fungi), predators and prey, and parasites and hosts.
- 5-2.5 Explain how limiting factors (including food, water, space, and shelter) affect populations in ecosystems.

**Guiding Questions:**

1. What makes a log habitat unique?
2. What is an example food chain you might find in a log?
3. How are rotten logs important to a forest habitat?

**Associated Reading Materials:**

- Under One Rock: Bugs, Slugs, and other Ughs. *Fredericks, Anthony D.* ISBN 1584690275. Publisher: Dawn Publications, 2001. No child will be able to resist looking under a rock after reading Frederick's rhythmic, engaging story. He has masterfully combined scientific fact and a clever cumulative story to create an entertaining book that will teach young children about the critters that can be found living under rocks.
- What's Under the Log? *Hunter, Anne.* ISBN 0395754968. Publisher: Houghton Mifflin. 1999. What are the things that scurry away when you turn over a log? With beautifully detailed illustrations, Anne Hunter shows the creatures a child might find there—a sow bug, a salamander, a millipede. Each illustration is accompanied by simple yet detailed text explaining the nature and habits of the animals that find shelter under a log.
- Compost Critters. *Lavies, Bianca.* ISBN 0525447636. Publisher: Duttons Children's Books. 1993. Describes what happens in a compost pile and how creatures, from bacteria and mites to millipedes and earthworms, aid in the process of turning compost into humus.
- A Log's Life. *Pfeffer, Wendy.* ISBN 0689806361. Publisher: Simon and Schuster. 1997. After an oak tree falls in the forest, it has another life as home to a variety of creatures. As it decays over time, it provides food and shelter to porcupines, ants, mushrooms, salamanders, and many others, until it eventually turns into a mound of rich black earth.

**Lesson Objective(s)**

Students will be able to:

1. Know the characteristics of a rotten log community
2. Describe how a log community contributes to a forest habitat

**Materials/Resources**

- Paper Towel Roll
- Large bowl
- Photos of organisms in a log community
- Tweezers
- Magnifying glasses

**Essential Question(s)**

- What defines a rotten log community?
- How is a log community important to a forest habitat?

**Activating Strategy**

Ask students if they know why forests aren't piled high with fallen logs and branches. What happens to trees after they die, and why is it important to study them?

A dead long on the forest floor can be compared to a wet roll of paper towels. Show the students the wet roll of paper towels and ask them how the log (paper towel roll) could be beneficial for a forest, particularly when the forest is seasonally dry. Squeeze out the roll into a bowl and discuss.

Explain that rotting log dwellers can be divided into three categories: those who live or use the outside of the bark, those who live under the bark and those who live in the bark.

On the bark:

Safe perch for chipmunks and squirrels  
Lookout for predators such as a weasel  
Reptile rest spot and feeding station  
Insect home for beetles, ants, and flies  
Hunting ground for insect eaters  
Home for mosses, ferns, fungi  
Starting place for seedlings

Under the bark:

Home for insects (such as beetles) and sow bugs  
Home for centipedes and millipedes

Inside the log:

Home for small, furry animals, such as mice and shrews  
Amphibian home for toads and salamanders

Show photos you have found while describing the three categories of log users.

Talk about how all the animals that use the log is part of the forest web of life. Mice eat the seeds, fruit, and other parts of plants. Other small animals (such as centipedes) are meat eaters. They feed on plant eaters and are then eaten by larger animals such as shrews and birds. The biggest hunters, such as owls and weasels, eat the birds and mice. The links between all these animals makes a food chain. When the owls and weasels die, their bodies rot, and insects feed on them. The cycle begins again!

**Procedure**

1. It is ideal if you can take the class on a visit to the woods or a forest for an examination of fallen logs. The older the logs are, the better! You could also find some rotting logs and place them in a school courtyard for observation. It is best if you do this a few weeks before you plan to study them. If none of these options are available, find a rotting log, scoop it up along with some surrounding material, place it in a large plastic container, and bring it into your classroom. Be sure to return the log when you are finished.
2. Once you have your log(s), tell students that they are going to explore energy and feeding concepts at work in the mini-habitat of a rotting log.
3. Make observations about the appearance and smell of the log. What is the size of the log? Is there anything growing on it? How does it smell? Is there evidence of animal life around it? Are there any plants growing on it? Predict what you will find under the log.

## TreesGreenville Companion Curriculum: Elementary Level

4. Examine the organisms found on the log. Use tweezers and a magnifying glass if necessary. Roll the log over carefully and study the organisms under the log.
5. Fill out the "A Rotting Log" worksheet (included), noting what you see on the bark, the inner wood pulp, and the soil. Also note any signs of animal life.
6. Repeat the observation process in another month, two months, etc. to note the changes over time.

### Closure (Reflection)

Ask students to share:

1. What they found on their rotting log
2. What they have learned about the rotting log community

**Assessment:** Rotting Log Worksheet

**Extension:** Have students research other micro-communities and how they are important to the ecosystem they are found in



## A ROTTING LOG

Name \_\_\_\_\_

Length of log \_\_\_\_\_

Location of log \_\_\_\_\_

What do you see around the log?

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Plants growing on the log are:

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What did you find under the log?

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What animal life or evidence of animals do you see?

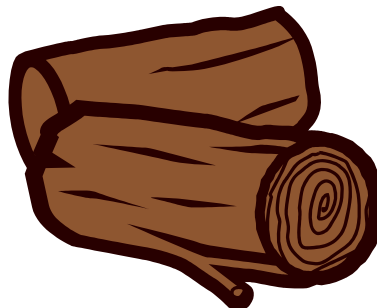
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Should rotting logs be removed from the forest? Why or why not?

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Effectively Using the Outdoor Classroom  
Elementary Curriculum for Interdisciplinary Studies

FIFTH GRADE

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**"Nature's Recyclers"**

UNIT: Habitats and Communities

Unit Essential Questions:

1. What characteristics of different habitats and communities?
2. How does nature recycle?

LESSON: Investigating nature's recyclers

STANDARDS ADDRESSED

(South Carolina State Science Standards)

Standard 5-2: The student will demonstrate an understanding of relationships among biotic and abiotic factors within terrestrial and aquatic ecosystems. (Life Science)

Indicators

- 5-2.1 Recall the cell as the smallest unit of life and identify its major structures (including cell membrane, cytoplasm, nucleus, and vacuole).
- 5-2.2 Summarize the composition of an ecosystem, considering both biotic factors (including populations to the level of microorganisms and communities) and abiotic factors.
- 5-2.3 Compare the characteristics of different ecosystems (including estuaries/salt marshes, oceans, lakes and ponds, forests, and grasslands).
- 5-2.4 Identify the roles of organisms as they interact and depend on one another through food chains and food webs in an ecosystem, considering producers and consumers (herbivores, carnivores, and omnivores), decomposers (microorganisms, termites, worms, and fungi), predators and prey, and parasites and hosts.
- 5-2.5 Explain how limiting factors (including food, water, space, and shelter) affect populations in ecosystems.

Standard 5-1: The student will demonstrate an understanding of scientific inquiry, including the foundations of technological design and the processes, skills, and mathematical thinking necessary to conduct a controlled scientific investigation.

Indicators

- 5-1.1 Identify questions suitable for generating a hypothesis.
- 5-1.2 Identify independent (manipulated), dependent (responding), and

controlled variables in an experiment.

5-1.3 Plan and conduct controlled scientific investigations, manipulating one variable at a time.

5-1.4 Use appropriate tools and instruments (including a timing device and a 10x magnifier) safely and accurately when conducting a controlled scientific investigation.

5-1.5 Construct a line graph from recorded data with correct placement of independent (manipulated) and dependent (responding) variables.

5-1.6 Evaluate results of an investigation to formulate a valid conclusion based on evidence and communicate the findings of the evaluation in oral or written form.

5-1.7 Use a simple technological design process to develop a solution or a product, communicating the design by using descriptions, models, and drawings.

5-1.8 Use appropriate safety procedures when conducting investigations

#### Guiding Questions:

1. What organisms are nature's recyclers?
2. How do I study something like a scientist?

#### Associated Reading Materials:

- Worms Eat My Garbage. *Applehof, Mary*. ISBN 0942256107. Publisher: Flower Press. 1997. The definitive guide to vermicomposting – a process using redworms to recycle food waste into nutrient-rich food for plants.
- Compost! Growing Gardens from your Garbage. *Glaser, Linda*. ISBN 0761300309. Publisher: Millbrook Press. 1996. In this nonfiction picture book, a little girl explains how her family turns garbage and garden waste into soil using their compost bin.
- Compost Critters. *Lavies, Bianca*. ISBN 0525447636. Publisher: Duttons Children's Books. 1993. Describes what happens in a compost pile and how creatures, from bacteria and mites to millipedes and earthworms, aid in the process of turning compost into humus.
- Decomposers in the Food Chain. *McGinty, Alice*. ISBN 0823957578. Publisher: PowerKids Press. 2002. Everything is connected! In this book, students discover that the final link in the food chain is also the "first" link, because producers are dependent on the nutrient-rich soil provided by the decomposers.
- A Shovelful of Earth. *Milne, Lorus*. ISBN 0805000283. Publisher: Holt. 1987. Describes different types of soils, their composition, where they are found, and the plants and animals that live in and on them.

#### Lesson Objective(s)

Students will be able to:

## TreesGreenville Companion Curriculum: Elementary Level

1. Know the characteristics of organisms that recycle nature's materials
2. Describe the process of nature recycling

### Materials/Resources

- Clear viewing container with air holes
- Hand-held garden spades or old spoons (optional)
- Hand lens (optional)

### Essential Question(s)

- How does nature get rid of its "Trash"?
- What are 'Nature's Recyclers'?

### Activating Strategy

1. Begin the lesson by asking the students:
  - a. What happens to all the leaves and branches that fall to the ground?
  - b. Who cleans up the forests and fields?
  - c. Would you like to find out who cleans up the fallen branches and leaves?
2. Explain to them that the creatures that help clean up the forest are called "nature's recyclers."
3. Prepare the children for a walk outside by telling them that they are going to become explorers and hunt for nature's recyclers. They will search for them and try to find where these creatures live and work. Everyone can be "armed" with a hand lens and viewing container if you have them.

### Procedure

1. Go outside and sneak up on the sites where you might expect to find nature's recyclers. Because nature's recyclers and the places they live are so small, your explorers may have to take turns looking at each site.
2. Remind them that they will be looking into creatures' homes, so everyone must be very careful, respectful, touch gently and put "roofs" back in place.
3. Consider capturing and placing some of the nature's recyclers in a viewing container to observe. Just remember to carefully return them to their homes when everyone is done looking at them.
4. Visit some or all of the following places, taking a few minutes to discuss what you see and feel. Encourage your explorers to smell decaying wood, wet leaves and dirt along the way. When you find some of nature's recyclers, ask your explorers questions like:
  - Is this a plant or an animal?
  - What is it called?
  - What color is it?
  - How many legs does it have?
  - Does it move fast or slow?
  - How does it feel? (touch gently – worms, slugs, mushrooms and lichens only)

How many are living together?

Why do they live here?

What are they eating?

Old Log - Roll over an old log. Look for decaying or rotting wood. Have children feel the difference between the hard wood and the soft pulp. Nature's recyclers change the old, hard wood into very soft, loose pieces that mix with the soil. Look for worms, slugs, beetles, sow bugs, millipedes and mushrooms. Return the log to where it belongs when everyone is done looking into this "home."

Tree Bark (on a dead log) - On the outside surface of the bark, look for mushrooms, lichen and moss growing. Slowly pull back a section of bark on a decaying log and look for beetles, termites and ants. Observe the creatures you see. Compare the different textures of wood. In addition to the questions listed above, ask:

Do you see any holes in the wood where nature's recyclers were chomping?

Is some of the wood very loose like sawdust?

How do you think the wood got like this?

Large Rock - Roll over a large rock. Observe the texture of the ground underneath. Feel how moist it is. Look for slugs, snails, worms and sow bugs. Also look for holes and tunnels leading underground. Roll the rock back into the place when everyone is done observing.

Underground - Have small children dig in soil, sand or wood chips with small garden spades or old spoons. Look for worms, millipedes and sow bugs. When your explorers find some of nature's recyclers, place them in a clear observation container for all to see. Talk about what they look like. The job of worms and many of nature's recyclers is to dig through the soil and make it soft and loose. Worms munch on dead leaves and other small dead things. They add nutrients to the soil. Be sure to return all creatures back to their homes and fill in any holes you made.

Leaf Litter - Digging through a pile of decaying leaves or grass clippings will also reveal several of nature's recyclers. Look for mushrooms, worms, beetles and millipedes. Compare the texture of a green leaf and an older decaying one. Ask:

What color is the older leaf?

Is it wet or dry?

How does it smell?

Can you see any signs of chomping and chewing by nature's recyclers?

Which of nature's recyclers are hard at work here?

## Closure (Reflection)

Following your exploration, review with the children what they saw. Ask some of the following questions:

Where do some of nature's recyclers live?

What do some of them look like?

What are their jobs?

How are wood, soil and leaves changed by nature's recyclers?

**Assessment:** Check for understanding through discussion and activity participation

**Extension:**

1. Make leaves and sticks out of scrap paper and have your children imitate how nature's recyclers tear these apart or break these down into nutrients. Also, have them imitate ants scurrying, sow bugs curling up, worms wiggling and slugs moving very slowly.
2. Collect sow bugs, a few leaves and sticks. Place them all in a closed container with a few drops of water. Punch air holes in the lid. Observe for a few days and then release the sow bugs.
3. Make egg carton insects or create your own nature's recyclers using recyclable materials. Encourage children to use their imaginations to come up with ideas for eyes, legs and antennae.



# All About Trees

At least one lesson in each grade level was written to follow the mission of TreesGreenville: tree planting and conservation. The following lesson plans within the curriculum guide specifically support these areas of emphasis. In addition, these lessons also support state and national standards.

Kindergarten

- “My Tree Secret Pal” (page 5)

First Grade

- “My Pet Tree” (page 26)

Second Grade

- “Environmental Exchange Box” (page 37)

Third Grade

- “Making Paper” (page 46)

Fourth Grade

- “Trees are Tops” (page 57)

Fifth Grade

- “Living Logs” (page 64)



# Appendices

## APPENDIX A: Presentation Rubric (Grades K-2)

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### I planned a beginning, middle, and end.



1. still learning



2. sometimes



3. almost always



---

### I used pictures, drawings, and props.



1. still learning



2. sometimes



3. almost always



---

### I looked at my audience.



1. still learning



2. sometimes



3. almost always



---

### I spoke loudly and clearly.



1. still learning



2. sometimes



3. almost always



---

### I answered questions from the audience.



1. still learning



2. sometimes



3. almost always



## APPENDIX B: Essay Rubric

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SCORE	Idea Development	Elaboration	Organization	Mechanics
<b>4</b>	Topic sentence is clear, accurate, and supported throughout the essay	Writing shows evidence of including five or more detailed (possibly creative) and relevant examples with no factual errors	Essay consists of at least two paragraphs (or 8-10 sentences) that is clear, focused, and organized	Essay consists of 1-3 spelling or grammar errors
<b>3</b>	Topic sentence is present and most statements are supported	Writing shows evidence of including three to four relevant examples with minor factual errors	Essay consists of 6-8 sentences (one paragraph) that is fairly well organized with few thoughts out of place	Essay consists of 4-5 spelling or grammar errors
<b>2</b>	Topic sentence is present but not clear; support may stray from topic	Writing shows evidence of two relevant examples with some factual errors	Essay consists of 4-5 sentence paragraph that is organized in places but mostly awkward, with statements out of place	Essay consists of 6-7 spelling or grammar errors
<b>1</b>	Lacks topic sentence	Poor writing with little to no specific details and factual errors	Essay consists of only 2-3 sentences with little to no structure and no focus	Essay consists of 8 or more spelling or grammar errors

## REFERENCES

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## **ADDITIONAL RESOURCES**

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Arbor Day Foundation, "What tree is that?":

<http://www.arborday.org/trees/whattree/?TrackingID=908>

Project Learning Tree, K-8 Modules:

<http://www.plt.org/environmental-curriculum-elementary-middle>

SC Forestry Commission, "What tree is this?": <http://www.state.sc.us/forest/refree.htm>

TreesGreenville Nonprofit Organization: [www.treesgreenville.org](http://www.treesgreenville.org)