Project Learning Tree®

GREENSCHOOLS
FOR EARLY CHILDHOOD

School Site Investigation

Downloaded from www.greenschools.org

PLT GreenSchools

Table of Contents

First Edition

Copyright 2016, Sustainable Forestry Initiative Inc.

© SUSTAINABLE FORESTRY INITIATIVE INC.

Introduction

Overview
Get ready to engage young learners while investigating the plants and animals that inhabit the area around your early childhood center! The information you gather will help you develop an action plan to make improvements to your center grounds.

Early Childhood Learning Objectives
- Identify some of the common plants and animals found around your site.
- Generate ideas for simple ways to improve wildlife habitat.
- Understand the signs of good health in trees.
- Develop a basic understanding of the benefits of trees.
- Develop a basic understanding that some surfaces absorb water and some do not.

Word Bank
Green Space, Habitat, Wildlife

Related PLT Education Activities
The following PLT activities can be used to supplement this Investigation.

Environmental Experiences for Early Childhood
While all the activities in this guide support the School Site Investigation, the following have the strongest connections:

Activity #4 – We All Need Trees
Activity #8 – Adopt a Tree
Activity #9 – To Be a Tree
Activity #10 – Trees as Habitats
Activity #11 – Three Cheers for Trees

Background for Educators

The focus of an early childhood center is usually the building. However, the outdoor area can provide many benefits to children, community members, and wildlife. Outdoor areas provide a place for children to play, garden, and connect with nature. Outdoor areas also provide many environmental benefits and ecosystem services.

Outdoor Classrooms and Wildlife Habitats

Creating and maintaining outdoor classrooms and wildlife habitats gives children the opportunity to learn more about the plants and animals in their area. Such areas provide a site for nature observations and a place where children can learn about seasonal changes.

You can attract a variety of wildlife by providing water sources and planting trees, shrubs, and flowers that provide food and shelter for wildlife. For example, you can attract butterflies by planting colorful native flowering plants.

Gardens

Benefits of Gardens
Gardens can be easily integrated into learning and can be as simple as a raised garden bed or a few potted plants. Early childhood center gardens are one of the best ways to engage learners in the outdoors because they provide an interactive environment in which children can observe, discover, and experiment. Gardens are living laboratories where children can discover how to plant a seed, how plants grow, and how to harvest fruits and vegetables. Teaching children to care for a garden also helps to plant the seeds of stewardship with the next generation.

Here are some more benefits of gardens:

- Gardening provides opportunities for outdoor exercise.
- Gardening teaches children a useful and lifelong skill.
- Children who have had the chance to tend plants typically show increased preferences for fruit and vegetable snacks.
- Children learn how to work cooperatively.
- A school garden can offer a symbolic focus for school pride and spirit.

© SUSTAINABLE FORESTRY INITIATIVE INC.

Garden Themes
Gardening projects can range from simple indoor herb gardens to extensive outdoor vegetable gardens. Here are some popular early childhood garden themes:

Alphabet: Grow plants or flowers that start with each letter of the alphabet.

Bird: Grow plants that provide food and shelter for birds.

Flower: Grow flowers that can be harvested to brighten the indoor environment.

Herb: Grow a variety of herbs that can be used for sensory activities.

Pizza: Grow vegetables that can be used as pizza toppings.

Pollinator: Plant native plants that attract butterflies and other pollinators.

Rain: Select plants and design landscaping to prevent runoff.

Relaxation: Intersperse benches, large boulders, and other seats so children can relax and read in the garden.

Cultural: Grow vegetables that reflect the culture of your early childhood community. For example, plant a Native American Three Sisters Garden of corn, beans, and squash.

Gardening Support
Many organizations provide support, supplies, and financial resources for garden projects. Log in to your GreenSchools account (or register for a free account if you haven't already done so) at www.greenschools.org to find out more.

Benefits of Trees on Early Childhood Center Grounds

As you conduct the School Site Investigation, you will assess the health and value of the trees around your center. Trees provide many benefits, including the following:

- They shade and cool buildings to reduce energy costs.
- They shade play areas to keep children cool.
- Their presence improves aesthetics.
- They create a place to teach children about trees and nature.
- They provide food and habitat for wildlife.

Trees also provide many ecosystem services that benefit humans and wildlife:

- They improve water quality by slowing the flow of runoff water, which helps to keep pollution out of streams, rivers, and lakes.
- They act as carbon sinks by absorbing carbon dioxide from the atmosphere.
- The shade that they provide along waterways helps maintain proper water temperature for fish and other aquatic life.
- They reduce soil erosion.
- They absorb various air pollutants.
- Their leaves filter and trap smoke, dust, and ash, thereby making the air cleaner.

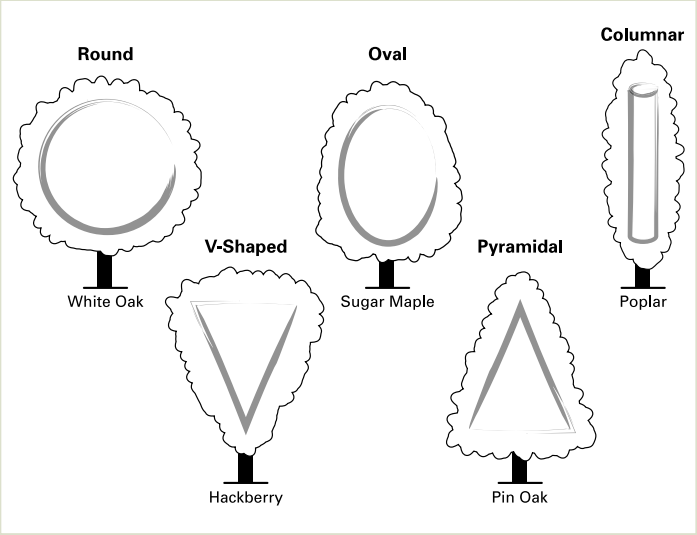
© SUSTAINABLE FORESTRY INITIATIVE INC.

Plant the Right Tree in the Right Place

The key to getting the maximum benefits from trees is to plant the right type of tree in the right place. For example, if you're deciding what trees to plant around your early childhood center, it's important to consider what the tree will look like in five to ten years or more. Will it grow tall and narrow, or short and wide? Does it grow fast or slow? Will it drop messy seeds or fruits on the play area? Following is a checklist of important characteristics to consider when selecting a tree:

- ☐ height and width (tree shape) at maturity
- ☐ interesting features such as bark, fragrance, and flowers
- ☐ evergreen or deciduous
- ☐ shade preference
- ☐ fruit
- ☐ hardiness
- ☐ growth rate
- ☐ soil moisture requirements

Shapes



Be sure that the shape of the tree as it grows will be appropriate for the space you have chosen.

The Arbor Day Foundation (http://www.arborday.org/) is a nonprofit organization dedicated to planting trees. They have an online tree guide and provide helpful information on selecting and planting trees. In addition, they run a collaborative program with Dimensions Educational Research Foundation called Nature Explore (www.natureexplore.org). This program helps children and families engage with the natural world. They also provide a wealth of information and services on implementing outdoor classrooms at early childhood education locations.

Pervious and Impervious Surfaces

As you conduct the School Site Investigation, you will determine the amount of pervious and impervious surfaces around your early childhood center. Pervious surfaces allow rainwater to percolate through to the ground. Examples include grassy areas, fields, playgrounds with a wood chip surface, and other green spaces. Pervious areas replenish the groundwater table and reduce storm runoff.

Impervious surfaces do not allow rainfall to be absorbed. Examples of impervious surfaces include asphalt, concrete, paved courtyards, parking lots, and sidewalks. Impervious surfaces have a variety of negative impacts on local watersheds:

- Impervious areas increase the rate and volume of stormwater runoff, which contributes to flooding and erosion along streams and rivers.
- As stormwater runoff flows over impervious areas, the temperature of the water increases. This warmed water flows into streams and increases the stream temperature. Warmer waters hold less dissolved oxygen, which negatively affects aquatic life.
- Pollutants and sediment carried from impervious surfaces into nearby aquatic environments decrease water quality and negatively affect fish, habitats, and spawning grounds.

© SUSTAINABLE FORESTRY INITIATIVE INC.

Because stream degradation can occur even when only 10–20 percent of nearby surfaces are impervious, it is useful to assess the extent of impervious surfaces on your school grounds. In addition, to increase infiltration and reduce excess stormwater runoff, you can implement a variety of simple strategies, such as the following:

- Plant trees and shrubs.
- Use rain barrels to capture rainwater that can be released later, when and where the water is needed.
- Design green roofs to absorb rain and reduce runoff.
- Develop a rain garden (a planted hollow in the ground that allows runoff to be absorbed).

Reducing the Risk of West Nile Virus

Hard, impervious surfaces allow rainwater to collect in puddles. Stagnant water in puddles, as well as in ditches, containers, and even playground equipment, provides a breeding ground for mosquitoes. Because mosquitoes carry diseases such as West Nile Virus, it is crucial to eliminate all standing water outside the early childhood center. Many schools request staff to report to maintenance personnel any areas of standing water on the grounds so corrective measures can be taken.

Physical Activity

Outdoor school environments are vitally important because they are potentially one of the few designated areas for play and physical activity for many children. When outdoor school environments are not available or are inadequate for children's needs, this is a significant factor that contributes to children's inactive lifestyles and obesity. Outdoor play areas at early childhood centers have a definite correlation to health outcomes and their quality should be a primary concern to all administrators.

Nature Deficit Disorder

Research has shown that a lack of an inviting outdoor place to play contributes to children's inability to connect with nature. Children who suffer from a disconnect with nature are increasingly common and are referred to as having "nature-deficit disorder." Such issues are even more significant in underserved urban communities that often lack the financial resources to build or maintain outdoor classrooms and playgrounds. According to an article in Pediatrics, the journal of the American Academy of Pediatrics, these detrimental effects are becoming more pervasive, given that children spend an average of six hours a day in front of electronic devices, but only four minutes a day playing outdoors.

PLT GreenSchool Videos

To learn more about improving school grounds and to see how other GreenSchools across the country are taking action, watch PLT's short videos Investigating School Site and GreenSchools in Action: School Site. These videos are available on PLT's YouTube channel: https://www.youtube.com/user/ProjectLearningTree.

© SUSTAINABLE FORESTRY INITIATIVE INC.

School Site Investigation Terminology

The following definitions may be useful to adult leaders as they conduct the Investigation. The terms preceded by the Word Bank logo WB are terms that you may want to introduce to young learners.

Ecosystem services
The services that humans derive from environmental functions, such as oxygen production, photosynthesis, and water purification.

WB **Green space**
Any area that is mainly covered with grass or other vegetation.

WB **Habitat**
An area that provides an animal or plant with adequate food, water, shelter, and living space.

Impervious ground
A surface that does not allow rainwater to soak into the ground, such as asphalt, concrete, a paved courtyard, a parking lot, or a sidewalk.

Integrated Pest Management (IPM) Plan
A sustainable approach to managing pests that combines biological, cultural, physical, and chemical tools to minimize economic, health, and environmental risks. For example, an IPM plan might aim to reduce mosquito populations first by eliminating stagnant water because mosquitoes lay their eggs in standing water. If this physical method is not effective, a chemical method, such as spraying an insecticide, may be used next.

Invasive species
A plant, animal, or other organism that is not native to a particular ecosystem and whose introduction causes (or is likely to cause) harm to the economy, the environment, or human health.

Native species
A species that occurs naturally in an area or habitat.

Nonnative species
A species that has been introduced by human action, either intentionally or by accident, into an area outside its natural range.

Pervious ground
A surface that allows rainwater to soak into the ground, such as a lawn, meadow, forest, playground with a wood chip surface, or other green space.

WB **Wildlife**
Animals that are not domesticated and are living in their natural habitat.

© SUSTAINABLE FORESTRY INITIATIVE INC.

Getting Ready

Use the following checklist as you complete each part of the Investigation:

☐ Review the *PLT GreenSchools for Early Childhood Educator Guide* and obtain any necessary permissions.

☐ Gather the following documents and supplies to complete the School Site Investigation:

- Regular tape measure (25 feet or more)
- If available, a forestry D–tape measure (a forestry D–tape measure is used to measure tree diameter; it has regular length measurements on one side and diameter conversions on the other)
- Chalk
- Tree-flagging tape or string
- Field guides to local flowers, shrubs, trees, and birds and other wildlife
- Pencils
- Paper
- Clipboards
- Calculators (for adults)
- A map of the early childhood center grounds, including buildings, playgrounds, parking lots, and so forth
- Aerial photographs of the school site, available on Google Earth.

☐ Introduce the theme to your children.

☐ Conduct the School Site Investigation.

☐ Assess your results and take action.

© SUSTAINABLE FORESTRY INITIATIVE INC.

Introduce the Theme

Reading Connections

The following books, as well as others, can be used to introduce young learners to the variety of plant and animals that may live around the early childhood center, as well as to gardening and mapping.

Mapping

- *Henry's Map* by David Elliot. Philomel Books, 2013. ISBN-10: 0399160728.
- *Me on the Map* by Joan Sweeney. Dragonfly Books, 1998. ISBN-10: 0517885573.

Trees, Plants, and Wildlife

- *About Birds: A Guide for Children* by Cathryn Sill. Peachtree Publishers, 2013. ISBN-10: 1561456993.
- *A Tree is Nice* by Janice May Udry. HarperCollins, 1987. ISBN 10: 0064431479.
- *A Tree Is a Plant* (Let's-Read-and-Find-Out Science) by Clyde Robert Bulla. HarperCollins, 2001. ISBN-10: 0064451968.
- *Be a Friend to Trees* (Let's-Read-and-Find-Out, Stage 2) by Patricia Lauber. HarperCollins, 1994. ISBN-10: 0064451208.
- *Franklin Plants a Tree* by Paulette Bourgeois. Scholastic, 2001. ISBN 10: 1550748785.
- I*n My Backyard* by Valarie Giogas. Sylvan Dell Publishing, 2007. ISBN-10: 0977742318.
- *Meeting Trees* by Scott Russell Sanders. National Geographic Society, 1997. ISBN 10: 0792241401.
- *One Small Place in a Tree* by Barbara Brenner. HarperCollins, 2004. ISBN 10: 068817180X.
- *Red Leaf, Yellow Leaf* by Lois Ehlert. Harcourt Children's Books, 1991. ISBN 10: 0152661972.
- *Trees, Leaves and Bark* by Diane Burns. T&N Children's Publishing, 1995. ISBN 10: 1559716282.

Gardening

- *Up in the Garden and Down in the Dirt* by Kate Messner. Chronicle Books, 2015. ISBN-10: 1452119368.
- *Little Critter: A Green, Green Garden* (My First I Can Read) by Mercer Mayer. HarperCollins, 2011. ISBN-10: 0060835613

© SUSTAINABLE FORESTRY INITIATIVE INC.

Conduct the School Site Investigation

Name(s):_____ Date:_____

Directions: Adult leaders should complete this questionnaire, involving their early learners with the Early Childhood Engagement activities.

Part I Map Your Site

1. Look for existing maps, aerial photographs, or blueprints of your early childhood center site to answer the questions that follow. If you don't have access to an existing map, you can generate a map using Google Maps or other map websites. The map of your center grounds will be useful as you complete the Investigation.

   a. What is the total size of the site, including buildings and all outdoor areas? (Look for scales on maps to calculate the size of the site.)

   _____

   b. Does the site include a playground?

   ☐ Yes ☐ No

   c. Does the site include a natural area for nature observation and outdoor discovery?

   ☐ Yes ☐ No

EARLY CHILDHOOD engagement

Learning Through Movement – Spatial Awareness

Before you make a map with children, try this activity to help them understand the position of objects in relation to each other. You can do this outside or in a classroom.

Have three children come to the front of the room. Line them up one in front of the other. Ask spatial awareness questions such as the following:

- Who is in the front of the line?
- Who is in the back of the line?
- Who is in the middle?

Now give each child in the class a small object. Have the children place their items:

- In front of themselves
- To their right
- To their left
- Between themselves and one other child.

You can conclude this activity with a discussion of the location of different objects in the room.

© SUSTAINABLE FORESTRY INITIATIVE INC.

Conduct the School Site Investigation

EARLY CHILDHOOD engagement

Make a Map

Introducing children to maps is a great way to teach them about spatial awareness and geometry. Although making a map of the entire school site is overwhelming for young learners, they can start learning about maps by making a map of their classroom.

You may want to start by reading one or more of the books on mapping suggested in the *Reading Connections*. Then make a map by hand or by using an online map-making tool.

To make a map by hand, start with an outline of the classroom on a large piece of butcher paper, leaving an open space for the door. Pre-cut shapes out of construction paper to represent each piece of furniture and other items such as rugs. Try to match the colors as closely as possible to the items in the room. Have learners take turns placing an item on the map. You can create a map key to indicate which color represents each type of furniture.

If your learners are ready, extend this activity by mapping the outdoor play space.

Sample School Map

© SUSTAINABLE FORESTRY INITIATIVE INC.

Conduct the School Site Investigation

Part II Pervious and Impervious Areas

EARLY CHILDHOOD **engagement**

Sponge Demonstration

Materials: Large tub or sink, measuring cup, dry sponge, rock.

You can demonstrate how water is absorbed by some surfaces and not by others by pouring ¼ cup of water onto a dry sponge and then pouring ¼ cup of water onto an impervious material such as a rock. Ask learners: What happens when the water is poured onto the sponge? What happens when the water is poured onto the rock? Explain that some materials allow water to soak in and others do not. Now wring out the sponge. Ask learners: What happened to the water?

1. Walk around the outdoor area of your center and use your map to mark the pervious and impervious areas. (See the Background Information section for more information on pervious and impervious surfaces.)

   a. List the types of pervious surfaces on the site:

   b. List the types of impervious surfaces on the site:

   c. Does the site contain more pervious or more impervious area?

2. Brainstorm and then record a list of ways that the amount of pervious area on the site could be increased.

EARLY CHILDHOOD **engagement**

Guided Discovery Walk

Bring a large jug of water (or water hose if it will reach) and take your learners on a guided discovery walk around the outdoor areas of your center to look for surfaces that do and do not absorb water. Test different surfaces by pouring water onto them and observing what happens. For example, does water soak into grassy areas or does it run off? What about sidewalks? Playgrounds? Parking lots? Explain that some surfaces, such as grassy areas, let water soak in just like a sponge. When plants need water, they can get it from the moist soil. As you continue the walk, ask learners to classify the surfaces according to whether they can absorb water or not.

If it's age appropriate, go into more detail about how rain that is not absorbed runs off into storm drains, streams, and ponds. This excess water is called "runoff." If there is a storm drain on the site, you can point it out and discuss where the rainwater goes. Explain that when it rains, dirt and pollutants are carried by the rain water into the streams and ponds. The pollutants can harm the fish, frogs, and other animals living there.

© SUSTAINABLE FORESTRY INITIATIVE INC.

Conduct the School Site Investigation

Part III Outdoor Space Assessment

1. What types of outdoor areas are found on your site that are not covered with grass or other landscaping? (Check all that apply.)

- ☐ Playground with wood chips, gravel, rubber, or other surface besides grass/plants
- ☐ Blacktop sports area (e.g., multisport, tennis, basketball)
- ☐ Paved trail
- ☐ Track
- ☐ Permeable pavement
- ☐ Parking lot
- ☐ Other_____

2. What types of green spaces are found on your site? (For this Investigation, a green space is any area that is mainly covered with grass or other vegetation. Check all that apply)

- ☐ Lawn
- ☐ Garden
- ☐ Field
- ☐ Forest
- ☐ Outdoor learning areas
- ☐ Nature areas
- ☐ Wetland area
- ☐ Other_____

3. What types of vegetation are found in the green spaces? (Check all that apply.)

- ☐ Mowed grass
- ☐ Tall grass
- ☐ Trees
- ☐ Other_____
- ☐ Flowering plants
- ☐ Shrubs
- ☐ Garden plants

© SUSTAINABLE FORESTRY INITIATIVE INC.

Conduct the School Site Investigation

EARLY CHILDHOOD engagement

Guided Discovery Walk

Take your learners on a walk outside to discover the different types of plants and animals that live around the center. Although they may not be able to see the animals, they can look for signs of wildlife, such as a bird's nest, chewed pine cones or leaves, and animal tracks.

You may want to take along children's field guides so they can try to identify the different plants and animals that they find. You can record your observations on the "Plant and Animal Observation Chart" found on page 16.

Safety: Remind children not to touch animals or poisonous plants such as poison ivy.

4. What types of animals are found on your site? (Check all that apply.)

- ☐ Birds
- ☐ Insects
- ☐ Earthworms
- ☐ Snails
- ☐ Other_____
- ☐ Small mammals_____
- ☐ Large mammals_____
- ☐ Amphibians (e.g., frogs, toads, salamanders)
- ☐ Reptiles (e.g., turtles, snakes, lizards)

5. Does the early childhood center maintain a list of the plants and animals observed on the center grounds? (See page 16 for a chart that can be used to record plant and animal observations.)

- ☐ Yes
- ☐ No

6. What types of activities take place in the outdoor spaces?

- ☐ Instruction
- ☐ Story time/reading
- ☐ Observing wildlife
- ☐ Games/sports
- ☐ Music/movement
- ☐ Art
- ☐ Gardening
- ☐ Eating/relaxation
- ☐ Meetings
- ☐ Other_____

© SUSTAINABLE FORESTRY INITIATIVE INC.

Conduct the School Site Investigation

7. Which of the following items are found in the outdoor spaces?

- ☐ Benches/chairs
- ☐ Tables
- ☐ Water feature
- ☐ Bird feeders
- ☐ Houses for animals (e.g., bird, bat)
- ☐ Other:_____

EARLY CHILDHOOD engagement

Outdoor Activities

Ask children what types of outdoor activities they like to do. Make a list of their favorite outdoor activities and games for future use.

8. If your site includes a garden, please answer the following questions:

a. Which type of garden or gardens are on the site?

- ☐ Butterfly
- ☐ Vegetable
- ☐ Rooftop
- ☐ Herb
- ☐ Rain
- ☐ Fruit
- ☐ Pollinator
- ☐ Container
- ☐ Flower
- ☐ Raised Bed
- ☐ Reflective
- ☐ Wildlife
- ☐ Theme_____(e.g., alphabet, pizza, sensory, color, historical)
- ☐ Other:_____

b. How are harvested items from the garden used?

- ☐ Used in classes
- ☐ Donated to local food pantry
- ☐ Other:_____
- ☐ Given to cafeteria for use in lunches
- ☐ Sold to center and community members

c. Who maintains the garden(s)? (Provide a brief description.)

Gardens

Ask children: If they could create any type of garden, what would it be like? Have them take turns sharing their ideas. They can even sketch their dream garden. If your center has a garden, engage children in helping with its maintenance. If your center doesn't have a garden, take them for a walk around your center grounds and discuss where a garden could be established.

© SUSTAINABLE FORESTRY INITIATIVE INC.

Conduct the School Site Investigation

9. Are the trees, flowers, and other plants in the green spaces native to your area? (See Background Information about Native, Nonnative, and Invasive Plant Species.)

   ☐ Yes ☐ No ☐ Some

10. List any other types of habitats or open spaces found on your site that have not been addressed in the previous sections (e.g., forest, prairie, or wetland).

    _____

    a. What types of plants and wildlife are found in these habitats that differ from the ones previously listed?_____

    b. Which facilities have been placed in these areas to make them better for teaching or exploring?

    ☐ Nature trails
    ☐ Decks
    ☐ Boardwalks
    ☐ Benches
    ☐ Outdoor amphitheater
    ☐ Teaching stations
    ☐ Signs
    ☐ Piers
    ☐ Wildlife observation area
    ☐ Other:_____

11. Does your center use any nearby natural areas for education?

    ☐ Nature center
    ☐ Park
    ☐ Stream
    ☐ Wetland
    ☐ Other:_____

12. Brainstorm and record a list of recommendations for ways the site could be improved. Think about how to make the areas better for outdoor activities, gardens, instructional use, safety, pollution control, runoff reduction, wildlife, and biodiversity.

© SUSTAINABLE FORESTRY INITIATIVE INC.

Conduct the School Site Investigation

EARLY CHILDHOOD engagement

Bulletin Board

After completing the inventory of plants and animals that live on your center grounds, create a bulletin board that includes pictures of the common plants and animals found on your site. This can be done by using two headings, "Plants" and "Animals," and putting pictures under each category. Look online to find pictures of native plants and animals found in your area. Alternatively, you can create a bulletin board that shows the interaction of the plants and animals by creating a scene such as the one below.

Plant and Animal Bulletin Board

Photo courtesy of Willow Brook Science Discovery Center

© SUSTAINABLE FORESTRY INITIATIVE INC.

Conduct the School Site Investigation

Plant and Animal Observation Chart

Use this chart to record signs and sightings of wildlife, flowers, birds nesting, leaves changing, and so forth on the center grounds. The chart will provide baseline data so that as you make improvements to the grounds, you'll be able to notice whether more diverse species are inhabiting the site. Make multiple copies of the chart to collect data throughout the year.

EARLY CHILDHOOD **engagement**

Guided Discovery Walk

Adult leaders can complete this chart as they take children on a guided discovery walk. If your outdoor space allows, engage children in drawing pictures of the plants and animals they see.

PLANT AND ANIMAL OBSERVATION CHART

Date _____ Weather _____ Location _____

Category	Write the names of any species you observe and any signs of animals that you notice. Note interesting observations.
Large Mammals	
Small Mammals	
Birds	
Reptiles	
Amphibians	
Insects	
Snails	
Earthworms	
Flowers	
Trees	
Shrubs	
Other	
Other	

© SUSTAINABLE FORESTRY INITIATIVE INC.

Conduct the School Site Investigation

Part IV Grounds Maintenance

1. Does your early childhood center have a landscape management or natural resources plan for the grounds?

   ☐ Yes ☐ No

2. Are grass clippings left on the green areas to increase moisture retention and lessen the need for watering?

   ☐ Yes ☐ No

   If no, what happens to them?

   _____

3. What is done with leaves in the fall?

   ☐ Left on lawns to decompose

   ☐ Left on lawns but processed to break up the leaves into smaller pieces

   ☐ Removed for composting

   ☐ Removed for use on garden beds

   ☐ Other (briefly explain):_____

4. Does your center have an Integrated Pest Management (IPM) Plan?

   ☐ Yes ☐ No

5. Are pesticides used on green areas?

   ☐ Yes ☐ No

6. Are chemical fertilizers used on green areas?

   ☐ Yes ☐ No

7. Brainstorm and record a list of recommendations for ways the grounds maintenance could be improved.

© SUSTAINABLE FORESTRY INITIATIVE INC.

Conduct the School Site Investigation

Part V Tree Assessment

This section of the School Site Investigation will help you determine the health and value of the trees on your grounds.

1 Tree Health

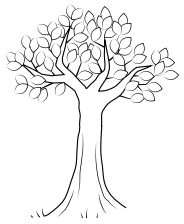
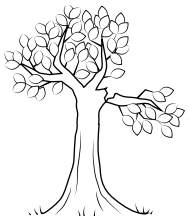
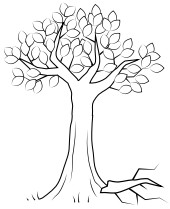
Complete the Tree Health Chart. Depending on the number of trees on the property, you can assess every tree or take a representative sample. To make it easy to keep track of the trees that will be assessed, tie tree-flagging tape around each tree. Mark each tree with a number using chalk.

EARLY CHILDHOOD engagement

Tree-tectives!

Tell learners that they are going to be "tree-tectives" (tree detectives) and search the center grounds for healthy and unhealthy trees. Give them copies of the "Tree-tective Trouble Guide" worksheet found on page 27 to help them find trees with signs of disease and damage.

TREE HEALTH CHART

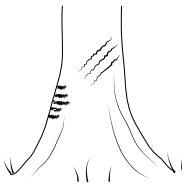
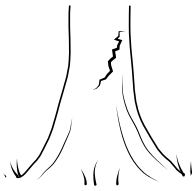
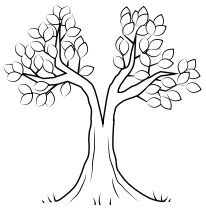
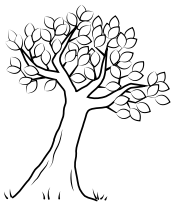
Write the assigned number of each tree in each row if it matches the description	Sign	Example	Information
	Healthy tree, no signs of disease or damage		
	Broken branches caught in tree or hanging down		Common causes include damage from strong winds, heavy snowfall, and ice. Large broken branches hanging in the tree should be removed to prevent them from falling on people and buildings.
	Broken branches on ground		Common causes include damage from strong winds, heavy snowfall, and ice.

continued on page 19

© SUSTAINABLE FORESTRY INITIATIVE INC.

Conduct the School Site Investigation

TREE HEALTH CHART (CONT.)

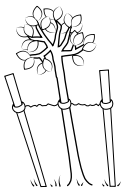
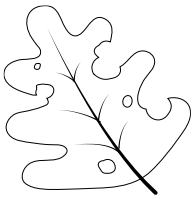
Write the assigned number of each tree in each row if it matches the description	Sign	Example	Information
	Damaged trunk		Trunks may be damaged by lawn mowers or cars. Large animals can also make deep scratches in trunks.
	Branch stubs		Branch stubs should be trimmed so the tree can heal.
	Cracked trunk		Common causes are damage from lightning or frost. Small cracks are usually not serious, but they do provide an opening where disease organisms can enter.
	Split trunk		Trees with split trunks may fail during a storm.
	Tree leaning		Leaning is often caused by root failure due to roots that are restricted and cannot grow. This unequal support system may cause the tree to fall over during storms.
	Vandalism		Carving into bark creates a wound on the tree where disease organisms can enter. This can compromise a tree and cause it to die.

continued on page 20

© SUSTAINABLE FORESTRY INITIATIVE INC.

Conduct the School Site Investigation

TREE HEALTH CHART (CONT.)

Write the assigned number of each tree in each row if it matches the description	Sign	Example	Information
	Tree broken off		If the tree has a rotten inner core, a storm can cause the tree to break.
	Problems with staking		Stakes that are not straight will cause the tree to lean.
	Leaves full of holes or missing		A common cause is insects feeding on the leaves. The tree is considered unhealthy if 10% or more of the leaves are damaged.
	Leaves deformed		Common causes include drought, insects, fungi, and herbicides. The tree is considered unhealthy if 10% or more of the leaves are damaged.
	Rotten spots on trunk		These spots often develop when fungi and bacteria get into trees from cracks and wounds.
	Dead tree		Trees may die after showing any of the above signs of disease and damage.

Total number of trees showing signs of disease or damage_____ **Total number of trees that are healthy**_____

© SUSTAINABLE FORESTRY INITIATIVE INC.

Conduct the School Site Investigation

2 Tree Value

You can easily assess the value of trees using i-Tree, a US Forest Service tool that provides tree benefit assessments. Depending on the number of trees on the property, you can assess every tree or take a representative sample. Be sure to include trees of varying sizes. You will need the following supplies: Field guides for local trees, tape measures, pencils, and calculators. Make as many copies of the Tree Value Chart that follows as needed. Then go to itreelearn.org and follow the the prompts to determine the value and other benefits identified below on the Tree Value Chart. You will need the following information for each tree you will assess:

- Tree species
- Tree diameter or circumference at 4.5 feet above the ground
- Year your building was built
- Tree condition (can be used from the chart above)
- Tree sunlight exposure

Watch PLT's video, Discover iTree.edu for a quick tutorial. This video is available on PLT's YouTube channel at https://www.youtube.com/user/ProjectLearningTree.

TREE VALUE CHART

Tree Name	Circumference at 4.5 feet above the ground	Calculated diameter (D = circumference/3.14)	Dollar value per year	Benefits (Stormwater, Energy, Air Quality, and CO_2)

EARLY CHILDHOOD engagement

What Is the Value of a Tree?

Ask children what they think the dollar value of a tree might be per year. Then share the value of some of the trees. Compare that amount to some common things their parents buy for them each year, such as a pencil, book, or item of clothing. Ask them what other benefits trees provide. (See the Background for Educators section for ideas.)

Measuring tree circumference at 4.5 feet above the ground.

© SUSTAINABLE FORESTRY INITIATIVE INC.

Conduct the School Site Investigation

3 Analysis and Recommendations

a. How could your site benefit from more trees? Explain.

b. What organizations in your community support tree planting? Some organizations that support tree planting include the Arbor Day Foundation, Tree City USA, Fruit Tree Planting Foundation, state Division of Forestry, and local extension agents. Your local community may have other community groups that can be of assistance, like a tree and beautification committee.

c. Brainstorm and then record a list of ways to improve the number and/or health of the trees on your grounds. Indicate on your map where additional trees might be planted.

EARLY CHILDHOOD engagement

Hooray for Trees!

As you take learners on a walk to look at the trees around your site, discuss some of the benefits we get from trees. Here are some ideas:

- Shade from trees helps to keep us cool on a hot day. (Illustrate this by having children stand in the sun and then in the shade.)
- Shade from trees also helps to keep buildings cool on a hot day, which saves energy.
- Trees provide food for people and wildlife. (Ask children how many of them like to eat oranges? apples? bananas? cashews? almonds? chocolate? (Chocolate comes from the cacao tree.)
- Trees provide wood to make building blocks and other wooden toys and to build houses.
- Trees provide habitat for many animals.
- Trees provide oxygen, something in the air we need to breathe.
- Trees help keep water clean by absorbing it through their roots and cleaning it.
- Trees are beautiful.

Have learners draw pictures of trees and some of the things trees provide.

© SUSTAINABLE FORESTRY INITIATIVE INC.

Taking Action

Complete the School Site Action Plan on the next page. You can engage young learners by creating a Classroom Action Book on ways to improve your early childhood center grounds.

EARLY CHILDHOOD engagement

Classroom Action Book

Your learners can create a classroom book filled with simple ways to improve their school grounds. A template for making the book that highlights their art and ideas is provided on page 26.

Directions: Have children draw a picture of how they can improve their school grounds. Alternatively, provide a variety of pictures for them to cut out and use. Have the children paste their picture to their "My Action Plan" worksheet. Then write, or help the children write, their responses to the prompt. Each child can contribute one page and then the pages can be combined into a book.

The finished book can be shared in the classroom or scanned and uploaded on a website so that it can be shared with other classes and family members. In addition, please share your book with PLT at information@plt.org or via our **PLT Facebook Page**. The book is a wonderful way to capture what the children have learned from this Investigation.

Before children begin their pages, review some of the things they discovered from this Investigation that might be appropriate for the book. Some ideas include:

- planting a tree
- hanging a birdhouse
- planting a garden
- planting flowers
- watering plants
- making a wildlife habitat
- taking care of a tree
- creating an outdoor classroom

© SUSTAINABLE FORESTRY INITIATIVE INC.

Taking Action

School Site Action Plan

Review the list of ideas that you brainstormed for each part of the investigation. Prioritize the list and decide on a few action projects that you want to do to improve your site. See the next page for action project ideas.

List your action project ideas for each section of the School Site Investigation.

Pervious and Impervious Areas

Outdoor Space Assessment

Grounds Maintenance

Tree Assessment

© SUSTAINABLE FORESTRY INITIATIVE INC.

Taking Action

School Site Action Project Ideas

Here are just a few ideas to help get you started. You can check out what other PLT GreenSchools are doing by watching PLT's short video GreenSchools in Action: School Site (available on PLT's YouTube channel at https://www.youtube.com/user/ProjectLearningTree) and by reading stories posted at https://www.plt.org/project-learning-tree-greenschools-stories. You can also get ideas at www.natureexplore.org.

Some project ideas:

- Plant trees—and care for them!
- Create an outdoor classroom.
- Establish vegetable gardens that can be used for studying science, math, and other core subjects, as well as to provide nutritious food and teach healthy eating habits.
- Plant a pollinator garden (much of the food we eat requires pollination by pollinators).
- Build a container garden, indoor herb garden, or rooftop garden.
- Improve wildlife habitat, for example, by planting a butterfly garden, hanging bird nesting boxes, or adding bird baths.
- Build a rain garden to improve the health of your local watershed.
- Construct a wildlife observation site.
- Build a nature trail or a fitness trail.
- Work with maintenance staff to establish environmentally friendly and sustainable management practices for the grounds.

© SUSTAINABLE FORESTRY INITIATIVE INC.

My Action Plan
worksheet

Name:_____

I can improve my school site by:

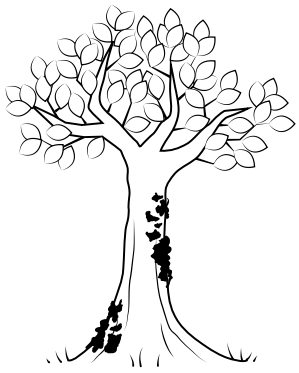
_____

© SUSTAINABLE FORESTRY INITIATIVE INC.

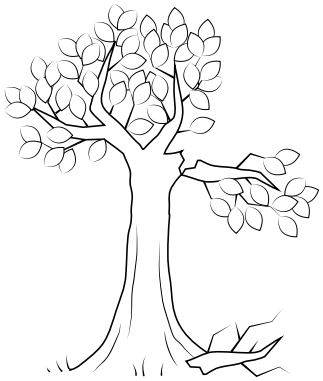
Tree-tective Trouble Guide
worksheet

Name:_____

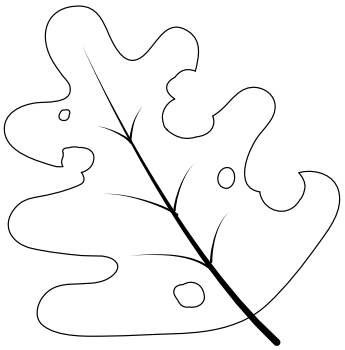
Use these picture clues to look for damaged trees.



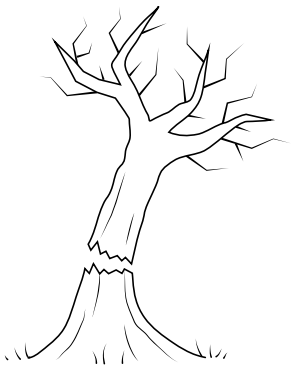
Damaged trunk



Broken branches



Leaves full of holes



Tree broken off

Dead tree

© SUSTAINABLE FORESTRY INITIATIVE INC.