



# Speak for the Trees!



Speak for trees, like the Lorax! Pretend that you are the Lorax and share your ideas for keeping the forest healthy while using the trees for human needs, like paper products and furniture.

**The Once-ler discovered too late, I must say  
That cutting down all of the Truffula Trees was a way  
To damage the woods and the water and soil  
and create a place where everything spoiled.**

**He ended up clogging the air with his smoke  
And silencing Swomee-Swans, who couldn't sing a note  
Because no one can sing who has smog in their throat.**

**He glumped up the pond where the Humming Fish hummed  
And could no longer hum with their gills all gummed.**

**So foresters know to sustain forest health,  
They must carefully tend to the whole forest wealth.  
They have practices for how they can harvest the wood  
and keep forests healthy for all of our good.**

Think like the Lorax! Consider ways in which you can help your local park or forest. Create a piece of art, write a story or poem, or make a video to illustrate your action on behalf of the trees.

When you complete your project, share it with your family and friends! Ask them if they have any other ideas to add.

**Keep on thinking like the Lorax!**



# Where is it?



## Materials needed:

- Compass.
- 4–5 items for scavenger hunt.

(Before beginning this activity, see the note at the end of the activity.)

In this activity, you will complete a scavenger hunt by using a compass to locate hidden objects. Using a compass and map to navigate is called **orienteeing**. Compasses are often easier to obtain than Global Positioning System (GPS) devices, and using a compass can be a fun way to learn about navigation. A compass also does not need a battery the way a GPS device does. This activity will provide you with a basic introduction on how to use a compass to navigate.

Name some examples of when compasses are used. Then, review the parts of a compass. Every compass has four cardinal directions: North (N), South (S), East (E), and West (W). Some compasses also have the intermediate directions marked: Northeast (NE), Northwest (NW), Southeast (SE), and Southwest (SW).

## Use the compass image to review the parts :

- A. Baseplate** – The rectangular bottom.
- B. Compass Housing** – The raised, circular portion of the compass. The numbers on the compass housing represent the 360 degrees of a circle.
- C. Compass Needle** – This is the needle that moves inside the compass. In most compasses, one half of the arrow is red and one half of the arrow is white. The red end of the compass needle always points to magnetic north. Magnetic north is where the North Pole is and is different than true, cardinal direction, north.
- D. Direction of Travel Arrow** – This arrow is on the base and often says “Read Bearing Here.” This arrow points in the direction that you want to travel after orienting the compass. A good way for students to remember this arrow is that it should always be pointing in the same direction as their nose and toes.
- E. Orienting Arrow** – This arrow is fixed to the bottom of the compass housing and does not move. It often is marked with stripes. This arrow is lined up with the compass needle after a travel direction (or compass bearing) has been set.

After you are familiar with the parts of a compass, it is time to learn how to use a compass to find the four cardinal directions. Start by finding North. Turn the compass housing until the North (N) marking is lined up with the direction of travel arrow. Next, hold the compass flat in the palm of your hand and turn your whole body until the red end of the compass needle is inside of the orienting arrow. The compass is now oriented in the North direction. Practice walking a few steps in this direction while keeping the red compass needle in the orienting arrow. Practice finding and moving in the other cardinal directions until you are comfortable using a compass.

Note that the following should be done before the activity begins!

## Have your parents or friends create a mini scavenger hunt in the yard or a nearby park!

The scavenger hunt should be set up before the compass activity begins. Each hidden item represents a checkpoint. Directions on how to navigate to the first checkpoint should be given at the beginning of the activity. Directions on how to navigate to the second item should be hidden with the first item. The second item has directions on how to navigate to the third item, and so on. If you are doing this with friends, you can take turns hiding and writing the clues

## For example:

1. Starting at the door, walk approximately five steps straight out of the door.
2. Stop and turn west. Continue west for approximately four steps.
3. Stop and turn south. Walk south for another four steps. Find the small round rock.
4. Your first object is located under the rock.

Activity courtesy of [www.naturalinquirer.org](http://www.naturalinquirer.org)



# Create a Critter



Dr. Seuss was great at creating imaginary creatures, like the Swomee-Swan and the Brown Bar-ba-loot. Now it's your turn to create a creature from your own imagination!

## Imagine a creature that never has been

What does it need? How does it fit in? Does it live in the water or soil or air? What will you call it and why should we care?

What is it's name?	
What does it look like? (You can draw a picture or use words to describe)	
Where does it live?	
What does it eat?	
Where and how does it raise its young?	
What else does it need to live and be happy?	
What's your favorite thing about your critter?	



# Reading a tree's life history

**NOTE: This is a challenging activity for kids who really like to think and figure things out!**

In this activity, you will learn to read a tree's life history! The life history of a tree is contained in tree rings. If you were to cut a tree down, you would see a series of rings on the stump (figure 1).



Figure 1. Tree rings tell the tree's life history.

Each year of its life, a tree creates a tree ring that has two parts: a light part and a dark part. The light part is called the early wood. Early wood is created during the spring and early summer when more water is usually available. The dark rings are called late wood. Late wood is created during the summer and sometimes early autumn. The late-wood rings are thinner and darker than early-wood rings because the tree does not grow as much during this time. One early-wood and one late-wood ring signify 1 year of growth for the tree.

Tree-ring width varies with growing conditions. The rings are wider, for example, if a lot of water, sun, and nutrients are available and they are thinner during times with less favorable conditions. Drought and diseases can stress the tree, resulting in less growth and thinner rings. Fire can leave a scar that will appear in the rings.

If you want to see a small example of tree rings, have an adult cut a small branch off a tree. You may need to use a magnifying glass to see the rings. Do you think you will see many rings in the branch? Why?

## Materials needed for this activity:

- A print out of the sample tree cores below.
- One 1-meter strip of adding machine tape, or a large sheet of white paper.
- Colored pencils and markers.
- Reference material such as almanacs or websites that provide the dates of social, cultural, environmental, and scientific events over the past 5 decades. These should be available at your local library.
- A notebook for recording results (optional).

Tree ring core samples showing the tree ring patterns of four trees are represented by the four striped strips below. These cores are

taken from a tree using an instrument borer. An instrument borer is a hand drill that pulls out a thin cylinder of wood from the trunk of a tree (figure 2). The borer must go all the way to the center of the trunk to accurately read the tree ring. After the core sample is pulled, scientists seal the hole and the tree is protected from insects and disease.

Using a copy of the four core samples below, you will construct the climate history of the trees. You will then record social, cultural, environmental, and scientific events that occurred during the lifetime of these four trees. The question you will answer in this activity is: How do tree rings help us understand the environment in which a tree lives?



Figure 2. This scientist is holding a core sample from a tree.

## Process:

1. Print the four striped tree core samples below.
2. Imagine that you have tree core samples from:

**Sample 1:** A living tree that was cored this year in Oakwood Forest.

**Sample 2:** A log found near the main trail in Oakwood Forest. The log was cored four years after it fell.

**Sample 3:** A tree that was cored one year before it was cut down in Oakwood Forest.

**Sample 4:** A barn beam from Oakwood Hollow Farm. The beam was cored in the current year.

3. Cut the tree core samples into four strips.

4. The left side of each tree core sample represents the first year of growth of the tree. The right side represents the bark and just to its left, the year the tree core sample was pulled. The tree rings are represented by the rectangles making up each strip.

5. Each year of growth is represented by a larger light-colored "ring" and a smaller dark-colored "ring." The larger light-colored ring represents fast spring growth and the smaller dark-colored ring represents slower summer growth. Beginning with Samples 1 and 2, you will match the tree ring patterns and tape the two strips together. Continue this by adding Samples 3 and 4. Sample 1 represents the youngest tree and Sample 4 represents the oldest tree that was sampled.

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# Reading a tree's life history (continued)

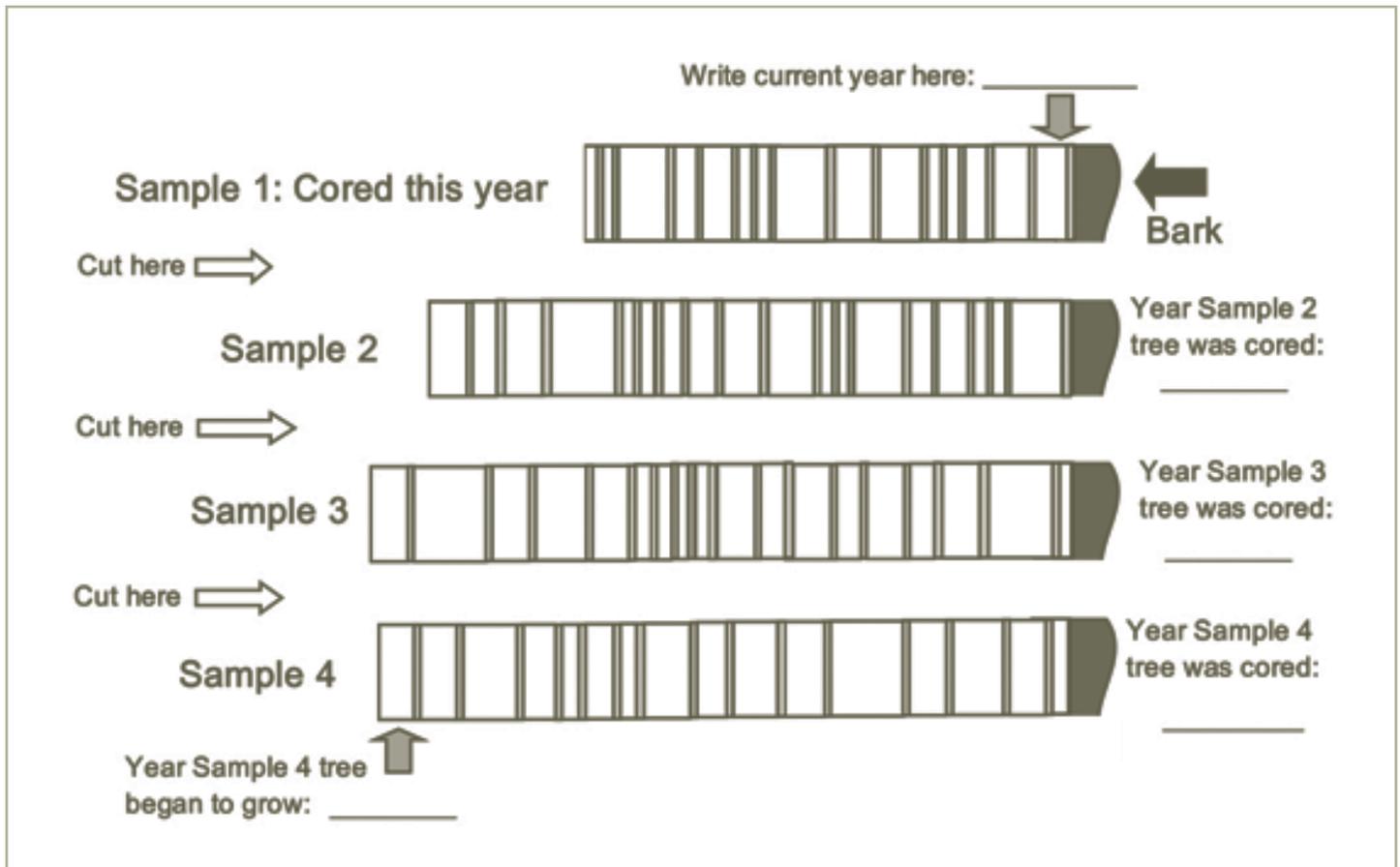


Figure 3

## Now, on the strips,

6. Write the current year in space provided.
7. Counting backwards from the current year, identify the years each tree was cored. To keep track, you may write any year where you find room on the strip.
8. Identify the year Sample 4 tree began to grow and write it in the space provided.
9. Identify the year each sample was cored and write it in the space provided.
10. Complete the following chart:

	Age of tree when cored	Year tree was cored	Year growth began
Sample 1 (Example)	14 years	2012	1998
Sample 2			
Sample 3			
Sample 4			

11. Look for patterns in the rings. Answer the following questions:
  - a. In what years was there low rainfall or other unfavorable growing conditions?
  - b. What two years were the most favorable for tree growth? What might have happened in those years to support tree growth?
  - c. What overall patterns do you notice in the year-to-year weather patterns?

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## Reading a tree's life history (continued)



Now you will make a timeline to explore the environment during which the tree lived. Spread out the adding machine tape or piece of paper on a large, flat surface. Beginning at the left end of the tape or paper, record each year from the earliest year identified on the tree-ring samples through the current year. After the years are recorded, identify years that were good growing years for the trees in Oakwood Forest, then identify which were poor growing years. Think of other events that might have happened during this time period such as birthdays, Presidential elections, important scientific discoveries, environmental events, cultural or social events, and record-setting sports achievements. Fill them in on the timeline. Color the timeline and illustrate it with drawings, photographs, or newspaper stories.

### Now, think about this tree's history and your own life history:

1. Which ring on which tree represents your birth year?
2. Which rings represent important events in your life?
3. What kind of growing season existed those years in Oakwood?
4. What buildings in your area were built during the lifetime of these trees?
5. How do you think the environment changed during the trees' lifetimes?

Scientists can do the same thing you just did with nearby trees of many ages, overlapping younger trees' ring patterns with older trees' ring patterns. In this way, scientists can discover the climate history of the past, perhaps hundreds or even thousands of years ago.

Now answer the question posed at the beginning of this activity: How do tree rings help us to understand the environment in which a tree lives?

Activity courtesy of [www.naturalinquirer.org](http://www.naturalinquirer.org).



# Plant a tree with the Lorax!

Join the Lorax and plant a tree near your home or in your community! A healthy tree will be around for years, but it takes a little planning before you reach for the shovel.



*For tree planting success, there are several things you should keep in mind...*

**SITE** – choose a site that has good soil, water and light conditions and gives the tree plenty of room to grow. Beware of buried and overhead utility lines!

**TREE SELECTION** – select a tree species that will thrive in your chosen site and that meets your goals for planting a tree.

**PLANTING and CARING** – know how to properly plant and care for the tree in order to give it the greatest chance for surviving and thriving.

**1. In selecting a SITE** to plant a tree you want to make sure to look up, down, and all around! The main thing to notice in looking up is if there are any utility lines nearby, if so how far away? Are there buried utility lines? Contact your local power company if you are not sure. In looking down, think about a tree's roots, which are a main part of its life support system, drawing up water and nutrients from the soil. Is there enough room for the roots to spread out? In looking all around, are there buildings, other trees or shrubs, sidewalks, curbs, streets nearby? How does the site fit into the larger environment? Is it a sunny or shady spot?

Besides the physical location where the tree is to be planted, think about the **SOIL** that it is going into. Is it a sandy soil that water rapidly moves through, leaving your tree high and dry? Or is it a clay soil that may hold water for too long? Is the soil easy to dig into? You may want to consider having your soil tested by your local extension agent or at a local garden center. They could make recommendations if any soil improvements are needed.

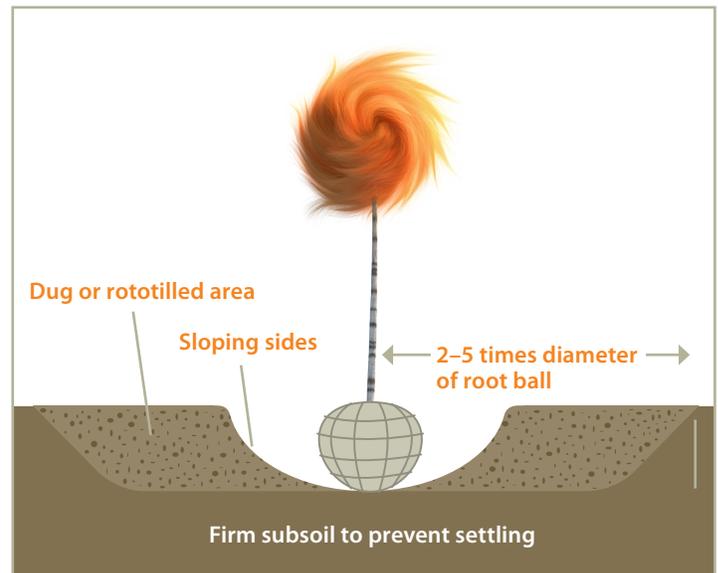
**2. In SELECTING A TREE** to match the site the most important thing to remember is that a tree grows! Try to envision what this tree will look like in 10 and 50 years. How tall will the tree get and how wide?

In choosing a tree for your site, consider planting a tree species that is native to your area. Native species preserve our natural heritage, provide food and habitat for native wildlife, decrease the amount of water needed for landscape maintenance, and require very little long-term maintenance if they are properly planted and established.

**3. Carefully TRANSPORTING your tree** to the planting site will increase the chance for a successful planting. Gently wrap the leaves or needles to protect them from the sun and wind. Be sure to cushion the stem and branches, and tie the tree down securely. Avoid traveling at high speeds. Ideally the tree should be planted immediately, but if this is not possible keep the tree roots moist and **STORE** away from direct exposure to wind and sun, preferably in a shady spot outdoors.

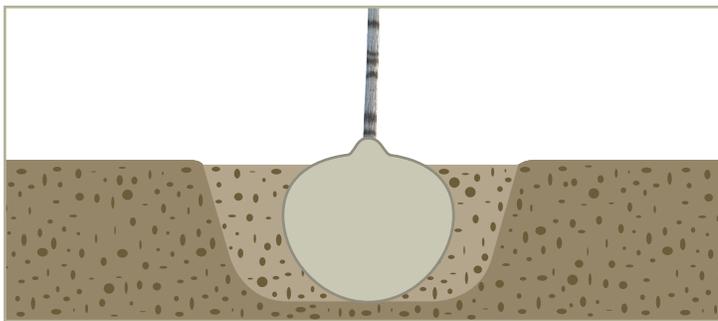
**4. PLANTING THE TREE**, finally! In digging the hole remember that most of a tree's roots grow horizontally, just below the soil surface and can spread out well beyond the branches, so the hole should be big enough to give the roots a chance to spread out. Make the hole wide, at least two to three times the width of the root ball especially if the soil is compacted and hard. The best way to make sure you plant the tree at the right depth is to identify the trunk flare where the roots spread out at the base of the tree. This point should be partially visible after planting. Make sure the tree is straight in the hole before filling in with soil.

## How Deep Should You Plant?

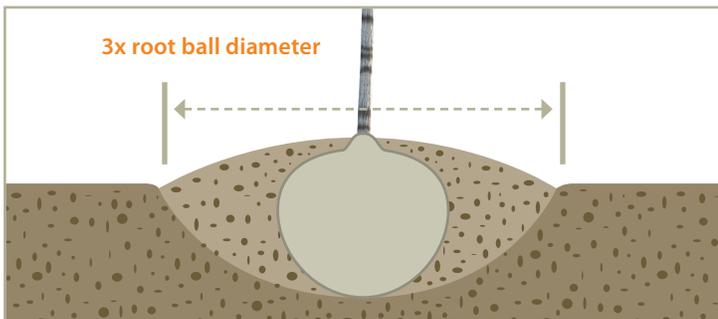


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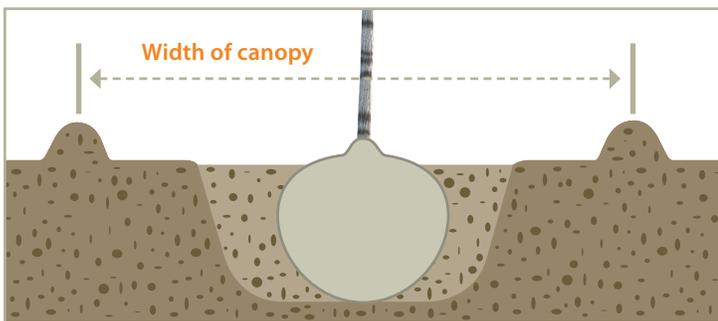
## Plant a tree with the Lorax! (continued)



Under **NORMAL CONDITIONS**, root growth is best encouraged by planting even with the surrounding terrain.



When **WET CONDITIONS** or **HEAVY SOIL** are problems, raising about 1/3 of the root ball above ground will aid the spread of lateral roots.



In **ARID CLIMATES**, a basin can be used to collect precious water.

For more information about selecting, planting, and caring for your tree, check out this website:

[www.arborday.org](http://www.arborday.org)

*Asking the right questions and following these tips will greatly increase the chances that the tree you have chosen will last a long time!*





# Nature at your service!

Have you ever heard the term, "ecosystem services?" Can you imagine what ecosystem services might be? Ecosystem services are services provided by healthy natural areas. Ecosystem services are valued by people, even if people do not always think about where these services come from. Examples include clean water, beautiful landscapes, healthy soil, places for wildlife to live, clean air, and places to do outdoor activities. Even pollination is an ecosystem service because pollination is important to food production.

Ecosystem services are important because they provide goods and services that are vital to human health and quality of life. Ecosystem services are life-support systems for plants, animals, and humans worldwide. Some ecosystem services are called "public goods" because they should be available to everyone. An example of a public good is clean air.

## Here are Examples of Some Ecosystem Services



**Fig1:** Decaying leaves on the ground provide a place to live for a variety of plants and animals.



**Fig2:** Nature provides a wide range of beautiful scenes for people to enjoy.



**Fig3:** Forests provide clean water.



**Fig4:** Some insects, birds, and bats are pollinators. Pollination is essential for many plants to reproduce and therefore helps to provide food for humans and other animals.



**Fig5:** Natural areas provide places for people to play and enjoy the outdoors.



**Fig6:** Bare rocks can provide ecosystem services too! Rocks provide a place for animals to sun themselves.



**Fig7:** Leaves and other vegetation help provide clean air.



**Fig8:** Wetlands provide a home for many plants and animals. They also filter pollutants.

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## Nature at your service! (continued)

Scientists have studied ecosystem services for a long time. Identifying ecosystem services enables scientists to let people know that ecosystems are important to everyone. This identification also helps people to understand which natural resources need to be protected and why they need to be protected.

### Now it is your turn to identify ecosystem services!

#### Materials needed:

- Piece of paper or a notebook
- Pencil
- Camera (optional)

Observe the natural land and waters around you. This can be right outside your door, in your neighborhood, in a local park, or even while you ride the bus. Identify as many ecosystem services as possible. Be creative! What kind of benefits do you see around you? Be specific when you write about the ecosystem services that you have identified. You can even take photos and write captions, just like the photographs and captions above.

After you have identified at least 7 ecosystem services, it is time to enjoy one of these services! For at least 5 minutes, find a safe place outside to observe nature. Be quiet and observe carefully. Listen for natural sounds and look at the trees, other plants, the animals, the waters, and even the sky. You can even spend time, for example, just watching ants as they go about their busy day. Do not speak during these 5 or more minutes. After you have been quiet and observant of nature for 5 minutes, identify what ecosystem service nature just provided for you. (HINT: you just might find that you want to do this longer than five minutes!)

Activity courtesy of [www.naturalinquirer.org](http://www.naturalinquirer.org)



**Fig9:** Nature provides a place for people to learn many new things.



**Fig10:** Forests provide many ecosystem services. They provide homes for plants and animals, store carbon which helps to slow climate change, provide clean air and water, provide food for people and other animals, protect the soil from eroding, and are places for people to enjoy the outdoors.



**Fig11:** Forests and waterways provide a place for fish, birds, and other animals to live.



# Lorax Obstacle Course

## Object of the game:

Some kids (**Friends of the Lorax**) attempt to get seeds to the end of the obstacle course, where the Unless platform is located. Their object is to get as many seeds as possible to the Unless platform.

Other kids (**the Once-lers**) attempt to take the seeds and put them in the Thneed Factory instead. Once-lers who tag a Friend of the Lorax take possession of their seed.

Other kids (**Eco-Once-lers**) will carry leaves, which identify them as sustainable foresters. Their job is to protect the Friends of the Lorax.

## Obstacles include:

- Boxes stacked up for the Thneed factory
- Thneeds: Yarn stretched between chairs or trees
- Tarp for the Gluppity-Glupp overflow
- Bins marked "seed bank"

## Other elements in the course:

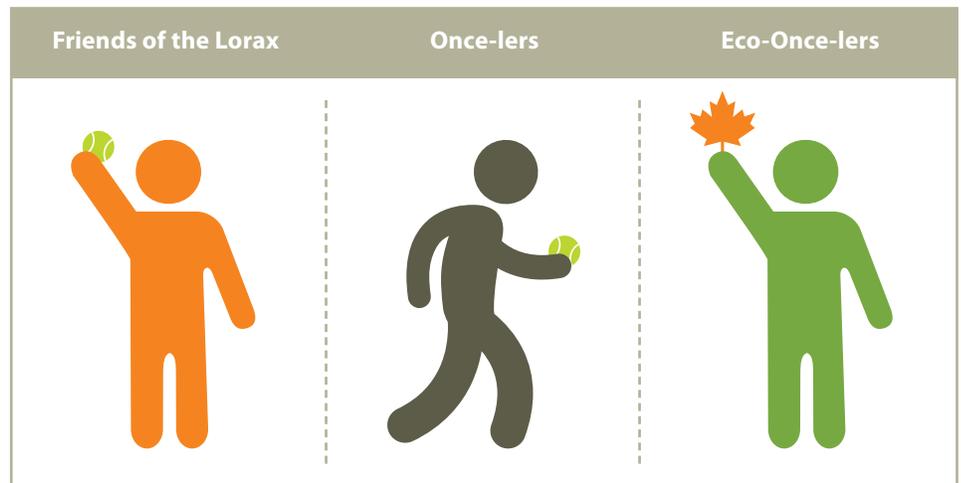
- Large leaf shapes cut out of paper or felt that are "safe places" along the course, or are carried by the Eco-Once-lers who provide safe passage for the seed runners.
- At the end of the obstacle course is the "Unless" platform. Successful Friends of the Lorax leave their seeds here and return to the beginning for another seed.

## Materials:

- Seeds: Tennis balls, bean bags, or similar objects. (Have 2-4 seeds per child. The more seeds, the longer the game.)
- Yarn
- Tarp for the Gluppity-Glupp overflow (pond)
- Chairs, to string yarn between. Or, if you are playing outside, you can use natural objects (trees, for instance) to use for your thneeds.
- Boxes for the Thneed factory
- Large paper or felt leaf or real collected leaves for the Friends of the Lorax
- A plain piece of cardboard for the Unless platform.

## Directions:

1. Divide into 3 groups. If you are playing with 8 people, for instance
  - a. Once-lers should be 2 of the people
  - b. Friends of the Lorax should be 4 people
  - c. Two people should be Eco-Once-lers.

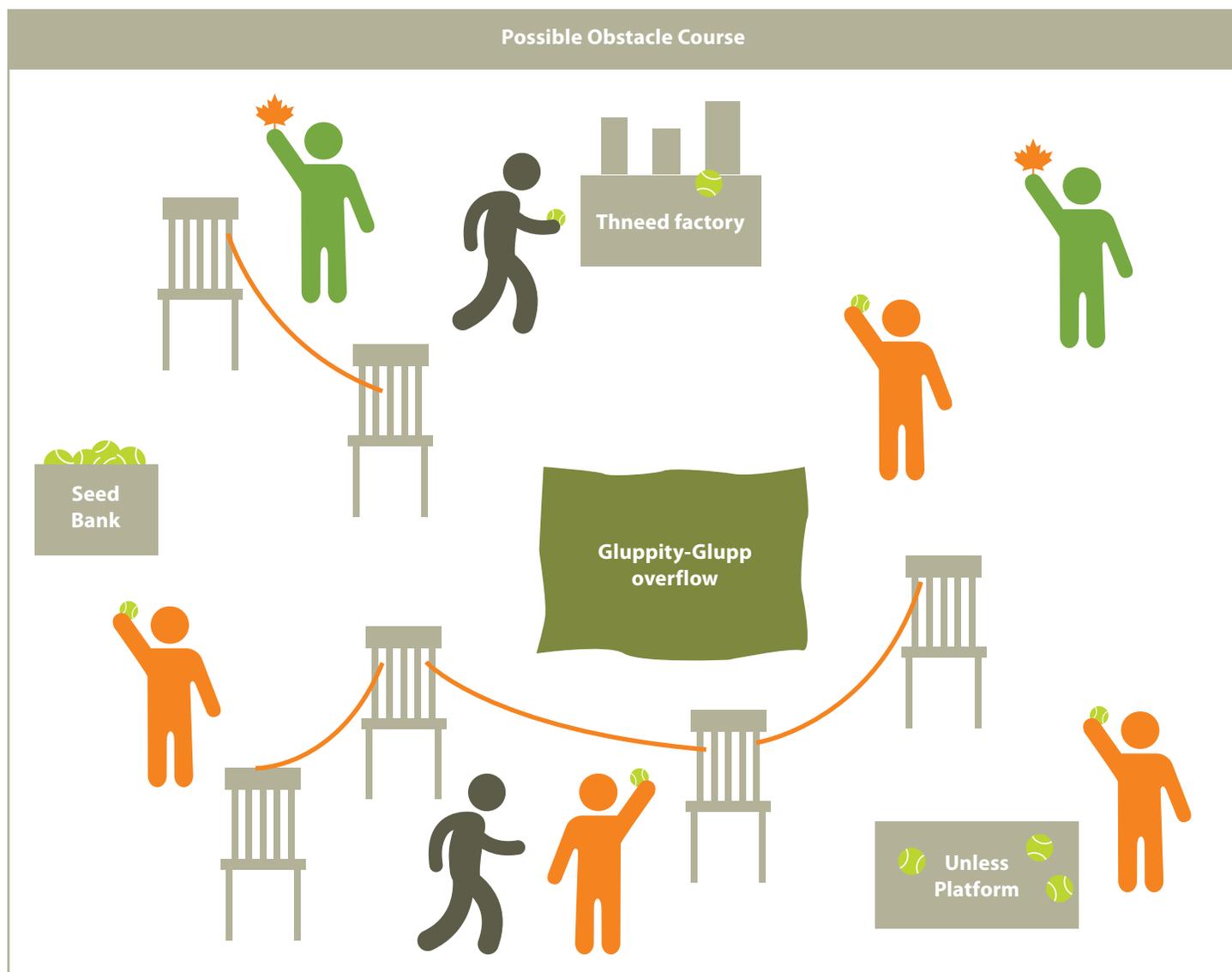


2. Designate boundaries of obstacle course
3. Friends of the Lorax have to run the obstacle course to get their seed from the beginning to the end of the course. They have to dodge the Once-lers along the way to get to the end. Once-lers must follow the course of the seed runners, dodging under the thneed, going around or over the gluppity glup overflow and passing by the seed bank. When a Once-ler tags a Friend of the Lorax, they take their seed and put it in the Thneed Factory. If Friends of the Lorax can't get their seed to the Unless platform at the end, they can ditch it in the "seed bank" before they are tagged, or team with an Eco-Once-ler to gain immunity (safety) from the Once-lers.
4. Friends of the Lorax can return to the beginning or to the seed bank as many times as they want in order to pick up another seed and try and get it to the Unless platform.

The game is over when all the seeds are used up. Whichever side has the most seeds (on the Unless platform, or controlled by the Once-lers in the Thneed Factory) wins.

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## Lorax Obstacle Course (continued)



### Vocabulary:

**Seed Bank:** A seed bank is where seeds are stored so that they are available should a particular species (like the Truffula Trees in the Lorax) become endangered or extinct. The seeds may be for food crops, potatoes, beans, squash, for example, or for trees. Seed banks are also a way to ensure biodiversity for future generations.

To learn more about seed banks, go to the following websites:

<http://www.nsl.fs.fed.us/index.html>

<http://www.nps.gov/plants/sos/index.htm>

**Biodiversity:** In the Lorax, the only kind of tree in the forest was the Truffula Tree. In a real and healthy forest, there are all kinds of trees, shrubs, and plants on the ground, called "groundcover." This is nature's way of ensuring that if one species is killed by disease, there are other species that will be able to survive. It's also nature's way of providing for the many different animals, birds, and insects that live in a forest. All living things need the basics: food, water, cover and a place to raise their young, but different species have different habitat needs.