Tree Needs Chain Game
(modified from Arbor Day Foundation listed activity)
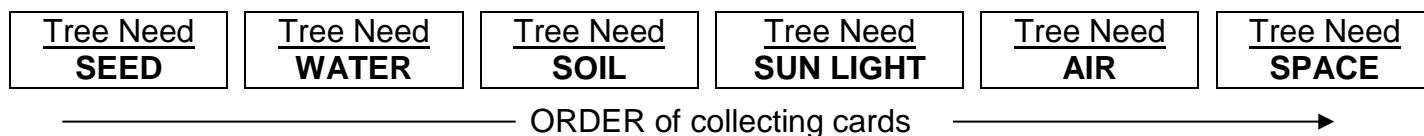
GRADE LEVEL: Grades 2-5
This game works best with 18-30 kids. A group that divides evenly by six is ideal.

OBJECTIVE: Students will be able to identify factors that are necessary for seed germination and plant growth.

TIME FRAME: About 15-20 minutes (longer with additional rounds of play).

MATERIAL NEEDS:
- Open area with space for game play.
- Tree Needs Cards found on page 4 or Index cards for making "Tree Needs" cards.
    - Sets of Cards: there are six cards to a set. You will need one card per student.
    - For 18 children you would need 3 of each card or 3 sets.
      If the group size does not divide evenly by six, make additional "tree needs" cards to hand out, starting from the top of the "Tree Needs Chart."
- "Tree Needs Chart" showing in what order "Tree Needs" must be collected.

Tree Need **SEED**	Tree Need **WATER**	Tree Need **SOIL**	Tree Need **SUN LIGHT**	Tree Need **AIR**	Tree Need **SPACE**

$\longrightarrow$ ORDER of collecting cards $\longrightarrow$

BACKGROUND:
A tree is a living organism. Like any living thing, a tree has certain needs that are essential for it to grow and thrive. Some trees can reproduce from cuttings, but most trees start from a seed. Starting as a seed, a tree requires water, soil, sun, air, and space to grow.

A seed can be described as a baby plant in a box with its lunch. A seed coat houses and protects the seed. There is enough food stored within the seed to feed and sustain the young plant as it begins to grow and until it develops leaves and can start to produce its own food by storing energy from sun light. Sometimes seeds need a period of dormancy over the winter before they will germinate.

Water is an essential ingredient for life. Often water is required to soften the seed coat so the tiny plant inside can germinate. Water is a vital part of a tree's basic structure and is one of the main components of the stored energy, food. It also transports nutrients from the soil to the tree roots.

Soil sustains and supports the tree. The soil holds the water and contains essential nutrients the tree needs to grow. Tree roots spread out in the soil, sucking up water and pulling in the nutrients. There are many different soil types, each capable of supporting different kinds of trees.

Trees, like all green plants, get their energy from the sun. It is the catalyst for the process of photosynthesis. Each of the tree's leaves is like a tiny factory – using the energy from sunlight to recombine carbon dioxide from the air and water into food as a simple sugar. This sugar is used by the plant for energy and is often stored for later use as starch.

Trees need space to grow. Without enough space, trees may have to compete with other plants for light, soil nutrients, and water.

DIRECTIONS:
Ask students what is needed for a new tree to grow in nature. (Challenge them to come up with six: seed, water, soil, sun light, air, space). As students make a claim ("trees need water"), ask them to give evidence of this being needed for tree growth. The evidence can be personal experiences and observations or information from a resource. You may need to prompt student ideas by providing starting letter(s) or hints.

Tell students that they are going to play a game where they have to collect all the things a tree seed needs to grow.

Goal of the Game
- During the game, students will form into a team. The goal of the team is to collect all the "tree needs". The winning team is the first to complete the set of "Tree Needs".
- They must be collected <u>in order</u>.. (For example - a seed must first get water, then soil, then sun, then air, then space...in that order.)

To start - each student will be handed a card.
- Holding the cards face down, pass out one card to each student, distributing an equal number of the different "tree needs." Students hold cards face down so no one can see what is on the card.
  - If the group size does not divide evenly by six, select additional "tree needs" cards to hand out, starting with requirements from the top of the "Tree Needs Chart."
- Each student should look at his/her own card, but not let anyone else see what "TREE NEED" is on that card.

Setting Up the Game Space
- All of the students make two lines facing each other across the room or across a field.
- Ask the students holding the seed cards to come stand in the middle between the two lines then give instructions to all the students.
  Instructions:
  - At a given signal, each student holding a seed card must run to one line and may ask only ONE student in that line to show them his or her card.
  - If the selected student is not holding a water card, the student with the seed card must run to the opposite line to ask someone there if they have a water card.
  - If the selected student is holding a water card, the two students <u>link arms</u> and run together to the opposite line to try to find someone with a soil card, the next needed component for a tree to grow.
  - The game continues with students going back and forth, adding "tree needs" to the tree chain in the order listed on the **Tree Needs Chart***, until a chain of all six of the needed components has been made.
  - Winner is the team of six that completes the tree chain first.

* Put up the "**Tree Needs Chart**" to help students remember in what order they need to collect the "tree needs".

"Tree Needs" Chart (in order)

- **SEED**

- **WATER**

- **SOIL**

- **SUN LIGHT**

- **AIR**

- **SPACE**

TREE NEED	TREE NEED
SEED	**WATER**
TREE NEED	TREE NEED
SOIL	**SUN LIGHT**
TREE NEED	TREE NEED
AIR	**SPACE**