

Tree Chain Game

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.

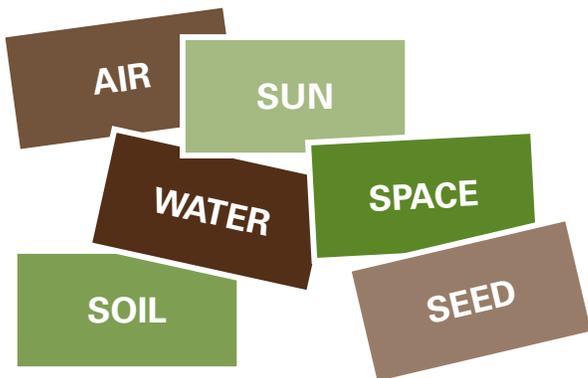
TIME FRAME:

About 15-20 minutes

(longer with additional rounds of play).

MATERIAL NEEDS:

- Need an open area with space for game play.
- Index cards for making "Tree Needs" cards. (Make one card per student. With 18 children you would need 3 seed cards, 3 water cards, 3 soil cards, 3 sun cards, 3 air cards and 3 space cards.) 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 include: Sun, Soil, Air, Space, Seed and Water. For added fun or challenge, you can add "BIRD" or "SQUIRREL" as something that would eat the seed, and thus if these were in the student's groups, the tree would not grow!



- "Tree Needs Chart" showing in what order "Tree Needs" must be collected.

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 (carbon dioxide), 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 through the process of photosynthesis. 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 photosynthesis. 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 - taking in sunlight and air (carbon dioxide) and mixing them with water and food from the tree's roots. When this happens, the leaves make a sugar-like food that feeds the tree.

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 factors are needed for a tree to grow. (Answers will vary.) As students respond, elaborate briefly on the function of each "tree need" mentioned and direct discussion so all factors (seed, water, soil, sun, air and space) are reviewed.

Tell students that they are going to play a game where they have to collect all the things a tree seed needs to grow. Starting with a seed, they must collect water, soil, sun, air and space. Students must collect all these "tree needs" AND THEY MUST COLLECT THEM IN ORDER. (For example - a seed must first get water, then soil, then sun, then air, then space...in that order.)

Tree Chain Game (cont.)

Tell students that they will each be handed a card. Each student should look at his/her own card, but not let anyone else see what “tree need” is on that card. Hold cards face down and pass out one card to each student, distributing an equal number of the different “tree needs.” (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.”)

Students hold cards face down so no one can see what is on the card. Have 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.

Explain to the students that, 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 link arms 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. 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.

Tree Needs & Sugar Production in Trees:

an Introduction to Photosynthesis

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Goal:

To show students how basic elements are necessary for trees, to show students how plants make their own food.

Materials:

- A small bag of sugar.
- 4 canisters (at least one clear one) each with one ingredient:
 - water
 - soil
 - air
 - sunlight—the clear one is the sunlight!

Gather the students in a circle and explain to them that you are holding the basic elements of all life on earth in your hands (or in a bag, etc)... you could hand the four containers out to a few students or do this part yourself. Explain that you will be emptying the basic elements of life into the middle of the circle. Instruct students to call

out what is being poured out of the containers when you empty them. Soil, Water, Air, and Sunlight—these 4 things are the basic elements of life!

After these were emptied into the circle, tell students to close their eyes and imagine being a tree. Their feet are roots in the soil, sucking up water! They can feel the sunlight on their leaves (hands) taking in energy and CO₂ to make food. With their eyes still closed have them reach out a palm and put a pinch of sugar into it. With their eyes still closed, instruct the students to lick their palms at the same time. They just made their own food through photosynthesis! Wouldn't it be the greatest if humans could do that?

Questions/Connections:

- How do different organisms get energy?
All plants make some form of sugar.
- Have you eaten maple syrup or felt pine sap?
They are both forms of sugar.

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