



ACORN MIX-UP

SUBJECTS: Science, Language Arts, Mathematics and Physical Education.

GRADES: 4-5

KERA GOALS: Meets KERA goals 1, 2, 3, 4, 5, and 6

ACADEMIC EXPECTATIONS: Make sense of various messages to which they listen; organize information and use of classification rules and systems; make sense and communicate ideas with movement; understand scientific ways of thinking and working; identify, analyze and use patterns; identify and analyze systems; use the concept of scale and scientific models; understand conditions of nature; understand change over time; understand and use statistics and probability; show their abilities to become self-sufficient individuals; show their abilities to become responsible members of a family, work group, or community; use critical thinking skills to solve a variety of problems in real-life situations; use a decision-making process to make informed decisions; use what they already know to acquire new knowledge, skills, or interpret experiences; connect knowledge and experiences from different subject areas; and expand their understanding of existing knowledge.

DURATION: One class period of 20-30 minutes

GROUP SIZE: One to two classrooms (15-60 students) or more

SETTING: Indoors or outside

KEY VOCABULARY: seeds, acorns, soil, germinate, drought, hazard

ANTICIPATORY SET: Today we are going to see how trees in a forest are able to survive. The tree we are going to talk about begins its life as an acorn. Does anyone know what kind of tree this would be?

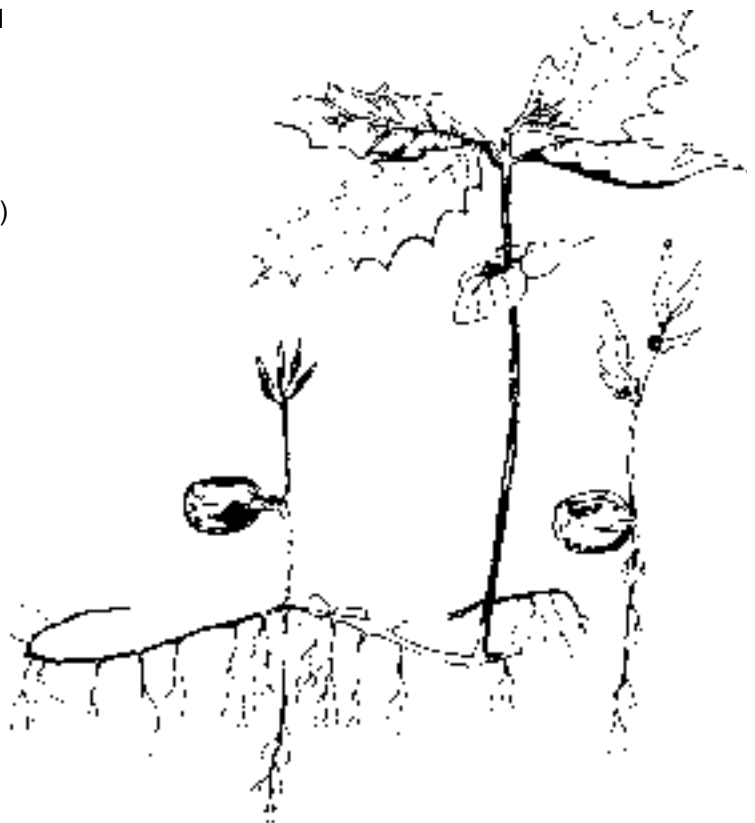
OBJECTIVE: The student will be able to: 1) discuss different factors that help or hinder the growth of tree seedlings; 2) work productively in small groups.

MATERIALS:

- ◆ Four or five bases
- ◆ Acorn Mix-Up cards (card titles on the following pages) Paste each title on a colored 5" x 8" index card and laminate

For 30 students:

- ◆ Six "Sunlight" cards
- ◆ Six "Warm Spring Day" cards
- ◆ Six "Water" cards
- ◆ Six "Good Soil" cards
- ◆ Six "Acorn" cards
- ◆ One "Drought" card
- ◆ One "Eaten by Deer" card
- ◆ One "Flood" card
- ◆ One "Poor Soil" card
- ◆ One "Fire" card



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BACKGROUND: “A tree is only a small part of a complex community of life forms that inhabit a forest. Within the forest ecosystem, animals, microscopic organisms, smaller plants, as well as other trees and shrubs struggle together and against one another for five basic necessities: food, water, air, light, and shelter.” The above information was taken from *Kentucky Forest Trees: How to Know Them*, produced by University of Kentucky, College of Agriculture.

During their lifetime, trees may produce a million seeds and yet only a small percentage will ever become a tree. Acorns need sunlight, good soil, water, and warm spring days in order to germinate. They also need at least a brief period of freezing for germination to be successful. Even after successful germination, a small tree could die due to hazardous weather conditions such as drought, flood, or fire. Other hazards affecting acorn success could include poor soil or being eaten by a deer. Once a tree is established it will take in water and nutrients from the earth. Trees give the earth the stability it needs to hold soil together to prevent erosion. As long as a tree continues to get water and nutrients from the soil it will flourish for many years to come. When a tree dies it permits sunlight to warm the earth allowing new seedlings to germinate and take its place.

Oaks are used for many things. Their most common uses are in furniture, timber for building, flooring, landscaping around buildings, and barrel making. The oak tree was and continues to be the most commonly used tree to mark boundaries when surveying.

In an oak/hickory forest, fire can be a hazard. In other types of forest, some trees, such as the ponderosa pine, need fire to complete the germination of their seeds. This could lead to a discussion about how different plants in different habitats have distinct needs and what could be hazardous to one species of tree may not affect another.

PROCEDURE:

1. In a classroom or outdoors, the teacher asks the students what is needed to make acorns grow into mighty oaks. The students should come up with answers like water, sunlight, warm spring days and soil. As the students come up with the answers the teacher should show the students the cards with the words on them. **Do not show the hazard cards!**
2. Use the concept of a baseball diamond and designate four or five bases. The teacher has the students randomly choose a base to stand near. (There needs to be at least five students near each base. If the group is small make fewer bases.)
3. Place all of the cards (adjust the sets of cards according to the number of students) in the center. Instruct the students to pick up one card and without looking at it go back to their base.
4. Have each student secretly look at his/her card. The teacher asks the students with the acorn cards to raise their hands. Groups without a seed can't win - they represent areas where seeds did not land. Ask these groups to sit down.
5. Ask each group with a seed to reveal a sunlight, water, warm spring day and good soil card. If all of these cards are present the seed can germinate. Then ask if there is a hazard card labeled either: eaten by deer, flood, drought, or poor soil. If so, the tree dies!
6. If no tree survived, have the students at each base decide what cards they would like to trade in for new ones. They will want to get rid of hazard cards and even good cards for which they may have duplicates. Each group should send one representative for each card they want to trade into the center to pick a new card- without looking at the new card. The students can continue trading until each group has a mixture of cards which will allow their tree to survive. If necessary, remove some hazard cards to insure survival.
7. Ask the students if it was easy for their seed to survive. You may want to play a few more rounds. (**Note:** you may want to begin by playing a round or two without any hazard cards and then add them for

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the last round or two to see how they change the game.)

8. The teacher discusses with the students how difficult it is for seeds to survive and grow. This is why trees have so many seeds, but very few seeds are able to become a tree.

9. The teacher may like to ask students further questions, such as: Some seeds are large like acorns. Is this an advantage? Some seeds are covered with a berry. Why is it an advantage for an animal to eat it? Do animals have similar needs in order to raise their young?

CLOSURE: We have seen what is required for acorns to germinate and begin to grow into trees. If any of the important elements such as sunshine, warm spring days, water, or good soil are missing then the acorns are unable to grow. It is the same with us. If we do not get the food, water, air, and shelter we need we are also unable to grow and survive!

EVALUATION: The teacher is able to evaluate the students as they interact with their group and participate in class discussions.

EXTENSIONS:

1. A follow up activity could include a nature walk to look for seeds, noting how many different kinds and how many seeds are found. For added fun in the fall- put rings of masking tape around wrist and ankles while walking(sticky side out) and see all of the seeds you will collect.
2. This would be a good time to have the students plant seeds. Acorns would be ideal but they take a long time to germinate. Flower seeds will give quicker results. Just make sure all five elements are included.
3. The students may want to have a special ceremony and plant an oak tree on the school property for future seeds.



ACORN MIX-UP WORD CARDS

DROUGHT

EATEN BY
DEER

FLOOD

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POOR SOIL

FIRE

SUNLIGHT

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WARM
SPRING
DAYS

WATER

GOOD SOIL

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