

GROWING



CFE 3250V

OPEN CAPTIONED
ALTSCHUL GROUP
CORPORATION

1993

Grade Levels: 1-4

15 minutes

DESCRIPTION

What helps seeds grow? Where do seeds come from? What is pollination? How does it happen? An elementary class experiments to find the answers. Time-lapse photography and illustrations reinforce the concepts.

INSTRUCTIONAL GOALS

- To identify water, soil, and warmth as necessary for plant growth.
- To dramatize scientific investigation.
- To demonstrate fair procedures for testing.
- To present the life cycle of a plant.
- To depict both natural and artificial means of pollinating plants.

BEFORE SHOWING

1. Read the CAPTION SCRIPT to determine unfamiliar vocabulary and language concepts.
2. Describe the excitement of being curious or thinking deeply about something, and then forming an “I wonder if . . .” statement or question, and seeking an answer to the mystery.
3. Define *fair test procedures* or *actions* as the steps that are taken to find the answers to the questions.
4. Discuss what procedures might and might not be followed to:
 - a. Find how many children in class have blue eyes.
 - b. Find how many children have more than one brother.
 - c. Find how many children brought their lunch.
5. Introduce the video as being full of questions about plant life and plant growth.
6. Explain that each question is followed by procedures or actions that will answer the question.

7. Provide nonfiction books, encyclopedia entries, or computer-generated graphics to teach the terms *pollination* and *germination*.

DURING SHOWING

1. View the video more than once, with one showing uninterrupted.
2. Pause at the appropriate scenes. Offer answers to these questions:
 - a. Could this bean seed lift weights?
 - b. What do seeds need to help them grow?
 - c. Will all the seeds have grown? Which ones will have grown more?
 - d. From where do bean seeds come?
 - e. What is *pollination*? How is the bee involved in pollination?

AFTER SHOWING

Discussion Items and Questions

1. Review the questions posed DURING SHOWING. Expand and elaborate as appropriate.
2. Why is it important that the test to find what a plant needs to survive be fair?
3. Compare the seed-viewing machine to a magnifying glass.
4. Describe the sequence of a seed becoming a flower. Discuss what happens if any of the essential elements are omitted.
5. Why do the bees search for nectar and pollen?
6. What is *pollen*? How is it produced? How does it produce seeds?
7. Why doesn't the plant center use bees for pollination? What role does the wind play? Can humans pollinate plants? How?
8. Describe the seed case of the flowers in the video. Determine why the flower dies away.

Applications and Activities

1. Design simple posters to depict plant growth essentials; for example, “Seeds need water, warmth, and light.”
2. Visit a local greenhouse. Prepare interview questions in advance. Ask the gardener to demonstrate paintbrush pollination as seen in the video.
3. Add bean seeds and soil to a clear plastic bag, and spritz with water. Tape the bag to a sunny window. Keep weekly observation logs. Include comments and illustrations.
4. Visit a local fruit and vegetable stand or walk to the nearest grocery:
 - a. Purchase bean sprouts, star fruits, and other items that relate to the video.
 - b. On “Taste-Tester’s Tuesday,” graph who likes/does not like the individual food items.
 - c. Create a hands-on bulletin board for matching pictures of fruits or vegetables with their seeds.
5. Provide brightly colored tissue paper. Tear into various shapes. Create flowers similar to the art pictures made by the children in the video.
6. Fold large art paper to create eight small creased sections. Write and illustrate “Pollination Picture Stories.”
7. Complete research to publish a manual entitled *Bee Basics*. Include pictures of the pollination process and the intricate dances and flight patterns that are involved.
8. Provide library texts and gardening magazines to research local annuals and perennials. Plot a garden. Plan purchases, prepare the soil, and plant.
9. Research the term *apical dominance* which allows for denser growth in plants when they are pruned at the apex of the stem.
 - a. Practice this concept, with store-bought seedlings.

- b. Investigate other pruning and propagation methods.

COMMUNICATION SKILLS

1. Practice new vocabulary using all appropriate modes of communication.
2. Practice speechreading and artistic skills using the open-ended sentence “Seeds come from . . .” Insert: pods, fruits, packets, and small plants.
3. Scan the CAPTION SCRIPT. Investigate descriptive adjective use.
 - a. Locate: *unusual fruit, velvety pod, special machines, large greenhouses*, and other applications in which the adjective precedes the noun.
 - b. Create alternate sentences using the pattern: *The fruit is unusual.*
 - c. Create expanded sentences using the pattern: *The star fruit, an unusual fruit, is yellow and pointy.*
4. Investigate the forehead area orientations of signs to depict the use of the mind: *wonder, ponder, consider, question, guess, predict, think, decide, idea, opinion.*
5. Make a game allowing for flower stems to be matched to flower tops. Join pollination vocabulary words and/or pictured signs with the correct definition for: *male, female, insect, pollen, flower, and nectar.*

WEBSITES

Explore the Internet to discover sites related to this topic. Check the CFV website for related information (<http://www.cfv.org>).

CAPTION SCRIPT

Following are the captions as they appear on the video. Teachers are encouraged to read the script prior to viewing the video for pertinent vocabulary, to discover language patterns within the captions, or to determine content for introduction or review. Enlarged copies may be given to students as a language exercise.

<i>(male announcer)</i> <i>Majid, gripping the bar</i>	<i>That's what these children</i> <i>are trying to find out.</i>
<i>for his final attempt</i> <i>to lift this weight.</i>	<i>What do seeds need</i> <i>to help them grow?</i>
<i>[grunting]</i>	<i>To make the test fair,</i>
<i>[exhaling]</i>	<i>the beans are divided</i> <i>into two groups.</i>
<i>[spectators cheering]</i> there it is.	<i>In one group,</i> <i>the beans are planted</i> <i>in the same amount of soil,</i>
<i>Another superb lift.</i>	<i>watered with the same quantity</i> <i>of water</i>
<i>(male narrator)</i> <i>Kamran can lift heavy weights.</i>	<i>and kept in a place</i> <i>where there is plenty of light.</i>
<i>Do you think that this bean seed</i> <i>can also lift weights?</i>	<i>In the other group, some beans</i> <i>are kept without water.</i>
<i>To find out, we need to plant</i> <i>the bean in soil.</i>	<i>Some are given no soil.</i>
<i>Here is the weight:</i>	<i>Some are kept in the dark.</i>
<i>with three other bean seeds.</i>	<i>And some are put</i> <i>in the refrigerator,</i> <i>where there is no warmth.</i>
<i>Do you think the bean seed</i> <i>that was planted</i>	<i>Here's what happens</i> <i>when a bean seed starts to grow.</i>
<i>will be able to lift</i> <i>the weighted lid?</i>	<i>That one's grown quite a little bit.</i>
<i>Let's see that again.</i>	<i>(narrator)</i> <i>After a few weeks,</i> <i>the children look at the results.</i>
<i>The bean seed has lots</i> <i>of strength and power</i>	<i>Will all the seeds have grown?</i>
<i>as it germinates</i> <i>and starts to grow.</i>	<i>This one's grown a lot too.</i>
<i>What helps seeds to grow?</i>	

(narrator)
Here's what happened the seeds

*that had no soil, water,
warmth, and light.*

*But these were planted
in soil, watered,*

given warmth and light.

They've grown into healthy plants.

(man singing)
*If you plant a seed
you need to know*

*What a seed needs
to help it grow*

*It needs water from the tap
shower, or storm*

*And to germinate
it needs to be warm*

*Add a drop of rain
as the days go by*

Reach for the sun

Reach for the sky

*Where do bean seeds
come from?*

*You often see
bean plants*

growing in gardens.

*The seeds grow
inside long pods.*

*There are lots
of different kinds of beans.*

[children talking, indistinct]

(child)
Big ones!

(narrator)
These are broad beans

*You can see the big seeds
inside the velvety pod.*

*You can also find seeds
inside fruit.*

Look at mine.

(child #2)
I found a seed. Look.

(narrator)
Here's the seed of an unusual fruit

called a star fruit.

*Look at how many seeds
there are inside a tomato.*

*Stephen is using
to help him examine the seeds
from a beech tree more closely.*

*Sometimes you get seeds
in packets.*

*But even these will first of all
have been produced by a plant.*

*Maggie works
at a plant-breeding center*

*where lots of plants are grown
to produce seeds--*

*Watch how the seed develops
into a plant with a flower.*

*The plants are grown
in large greenhouses*

*with lots of light
and warmth and water.*

(man singing)
*If you raise a plant
you need to know*

*What the plant needs
to help it grow*

*It needs roots to keep it
firm in the ground*

*A stem to hold the leaves
where the light is found*

*With water, food, and warmth
the plant will grow*

*First buds and then a flower
will start to show*

*Add a drop of rain
as the days go by*

Reach for the sun

Reach for the sky

*Many plants have
colorful flowers.*

*The flowers contain the male
and female parts of the plant.*

*They are brightly colored to
attract bees and other insects.*

*Bees visit flowers
to look for food.*

*They're searching for a sweet
liquid--called nectar--*

and pollen.

*As the bees climb into flowers
looking for nectar,*

*the fine hairs on their bodies
become covered with pollen.*

*Pollen is produced
by the male parts of the flower.*

*It's like a
fine dust or powder.*

*[buzzing]
z-z-z-z-z*

*When the bee moves
to another flower,*

*the pollen from its body
rubs onto the female part
of the flower.*

*Then a male cell from the pollen
joins with a female cell*

to produce a seed.

*At the plant center
they have three different ways*

*of taking pollen from the male
to the female parts of plants*

to produce seeds.

*They do not use bees
because they would sting.*

They use flies instead.

*[buzzing]
z-z-z-z-z*

*Look at the flies visiting
flowers to feed on nectar.*

*As they do this,
they are carrying pollen*

*from the male to the female
parts of the plant.*

*In nature,
this is done by insects*

*or, sometimes, by the wind
blowing the pollen.*

*At the plant center, they
also transfer pollen by hand.*

Jane chooses a flower bud

*and carefully
plucks away parts*

*until only the female part
is left.*

*She then takes
an open flower*

*and transfers pollen
from the male parts*

onto the female parts.

*You can see
the yellow pollen grains.*

*The female part
then grows and swells*

*as the seeds develop
inside it.*

It eventually forms

*in which there are
many tiny seeds like these.*

*Can you see what David is using
to transfer the pollen*

on these geranium plants?

*He takes a small amount
of pollen*

on the end of his paintbrush

*and transfers it from the male
to the female parts*

of the flower.

*Once the pollen
has been transferred,*

seeds grow and develop.

*The flower's job
is now finished,*

and it dies away.

*This is the geranium's
seed case.*

*Inside each of these
is a seed.*

*Can you remember what seeds need
to help them grow into plants?*

*(man singing)
As the flower dies
it makes lots of seeds*

*To help them grow
here's what the seeds need*

*Warmth, light, and food
Water from rain*

*Then the seeds will grow
into plants again*

*Add a drop of rain
as the days go by*

Reach for the sun

Reach for the sky

*It grows and produces
a flower.*

*Insects and the wind transfer
pollen from the male*

*to the female parts of the plant
to produce seeds.*

*The seeds then fall
to the ground,*

where they find food.

*With water and light
and warmth,*

*they grow
into new plants.*

*If you look around
in summer and autumn,*

*you can see the parts
of the plants*

*where seeds
grow and develop.*

Remember Stephen?

*He's on his way home
through the park.*

*He's still got one
of the beech seeds
in his pocket.*

*This tiny seed,
which he can hold in his hand,*

*can grow into a huge tree
many times taller than him.*

*What is needed
for this miracle to take place?*

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