

Fantastic Flower

Objective

Students will learn the anatomy of a flower and play a game in which they simulate pollination.

Background

Floriculture, or flower farming, is a big business in Oklahoma. Floriculture is a discipline of horticulture concerned with the cultivation of flowering and ornamental plants for gardens and for the floral industry. Floriculture crops include bedding plants, flowering plants, foliage plants or houseplants, cut cultivated greens, and cut flowers.

Easter lilies and poinsettias account for the largest quantity of potted flowering plants in Oklahoma's floriculture industry. Begonias, geraniums, impatiens and petunias are the best-selling flowering hanging baskets grown in Oklahoma.

We grow flowers for their beauty and fragrance, but the reason for a flower's beauty and fragrance is the survival of the plant. Flowers attract bees, wasps and other insects which carry pollen from one plant to the next. This process is necessary so the plant can produce fruit, which produces seed from which new plants grow.

The parts of the flower include petals, sepals, one or more carpels (the female reproductive organs), and stamens (the male reproductive organs).

The pistil is the collective term for the carpel(s). Each carpel includes an ovary (where the ovules are produced. Ovules are the female reproductive cells, the eggs), a style (a tube on top of the ovary), and a stigma (which receives the pollen during fertilization).

Stamens are the male reproductive parts of flowers. A stamen consists of an anther (which produces pollen) and a filament. The pollen consists of the male reproductive cells; they fertilize ovules.

Pollen must fertilize an ovule to produce a viable seed. This process is called pollination and is often aided by animals like bees, which fly from flower to flower collecting sweet nectar. As they visit flowers, they spread pollen around, depositing it on some stigmas. After a male's pollen grains have landed on the stigma during fertilization, pollen tubes develop within the style, burrowing down to the ovary, where the sperm fertilizes an ovum (an egg cell), in the ovule. After fertilization, the ovule develops into a seed in the ovary.

Some flowers (called perfect flowers) have both male and female reproductive organs; some flowers (called imperfect flowers) have only male reproductive organs or only female reproductive organs. Some plants have both male and female flowers, while others have males on one plant and females on another. Complete flowers have stamens, a pistil, petals, and sepals. Incomplete flowers lack one of these parts.

Oklahoma Academic Standards

GRADE 1

English Language Arts—
1.R.1,2,3; 2.R.1; 4.R.1,3;
1.W.1,2; 3.W.1; 2.F.1,2
Science—1.LS.1,2
Visual Art—3.2,4

GRADE 2

English Language Arts—
1.R.1,2,3; 2.R.1; 4.R.1,3;
1.W.1,2; 3.W.1; 2.F.1,2
Science—2.LS.2.2
Visual Art—3.1,2

GRADE 3

English Language Arts—1.
R.1,2,3; 2.R.1; 4.R.1,3;
1.W.1,2; 3.W.12.F.1,2
Science—3.LS.1.1
Visual Art—3.2,4
English Language Arts—3.
RI.1,2,4,10; 3.RF.4C;
3.W.2,4,5,8,10; 3.L.4A

Materials

modeling clay

pipe cleaners

tissue paper

Vocabulary

anther—the part of the stamen of a flower that produces and contains pollen and is usually borne on a stalk

filament—the anther-bearing stalk of a plant stamen

flower—a shoot of a higher plant that is specialized for reproduction and bears modified leaves (as petals)

ovary—the enlarged rounded lower part of the pistil of a flower in which seeds are formed

ovule—an outgrowth of the ovary of a seed plant that after fertilization develops into a seed

petal—one of the often brightly colored modified leaves that make up the corolla of a flower

pollen—a mass of tiny particles in the anthers of a flower that fertilize the seeds and usually appear as fine yellow dust

sepal—one of the specialized leaves that form the calyx of a flower

stigma—the upper part of the pistil of a flower which receives the pollen grains and on which they start to grow

style—the narrow long middle part of the pistil of a flower which bears the stigma at its tip

English Language Arts

1. Read and discuss background and vocabulary.
2. Hand out copies of the “Words in Context” worksheet.
 - Review context clues.
 - Students will read and complete the worksheet.
3. Students will write stories about how a flower is pollinated and what happens after pollination.

Science

1. Show the diagram of a flower included with this lesson. (Use an overhead projector or hand out copies.) Explain that you are going to play a game to show what happens during pollination of a flower. A minimum of 24 students are needed to play this game. Adjust as needed for the number of students in your class.
 - Assign parts to students, using the cards included with this lesson.
 - Students will arrange themselves in the shape of a flower.
 - At a sign from the teacher, each group follows the instructions on its cards.
 - Once all the flower parts are behaving as instructed, the teacher acts as a pollinator, following the instructions on the bee/teacher card.
 - After the “flower” has been pollinated all parts collapse to the floor with a huge sigh of relief.

Visual Art

1. Provide modeling clay, pipe cleaners and tissue paper.
 - Students will build their own flowers, with all the parts.

Extra Reading

- Barry, Frances, *Big Yellow Sunflower*, Candlewick, 2009.
Brown, Peter, *The Curious Garden*, Little, Brown, 2009.
Carle, Eric, *The Tiny Seed*, Little Simon, 2009.
Colburn, Cherie Foster, *Our Shadow Garden*, Bright Sky, 2010.
Edom, Helen, *Science With Plants*, Usborne, 2007.
Godwin, Sam, *A Seed in Need*, Picture Window, 2004.
Tagliaferro, Linda, *The Life Cycle of a Sunflower*, Capstone, 2007.

Name _____

Words in Context

Use the context to find the meaning of unfamiliar words.

- Look at the new word. Sound it out.
- Look at the word in front.
- Look at the words behind the new word.
- Are these clues to the new word?
- What is the paragraph about?

Floriculture, or flower farming, is a big business in Oklahoma. Floriculture is a discipline of horticulture concerned with the cultivation of flowering and ornamental plants for gardens and for the floral industry. Floriculture crops include bedding plants, flowering plants, foliage plants or houseplants, cut cultivated greens, and cut flowers.

Easter lilies and poinsettias account for the largest quantity of potted flowering plants in Oklahoma's floriculture industry. Begonias, geraniums, impatiens and petunias are the bestselling flowering hanging baskets grown in Oklahoma.

Floriculture must mean

- a. studying about Florida b. flower farming c. something you rinse your mouth with

What key words did you find in the paragraph?

Most people love to smell rose flowers. But did you know that some kinds of rose plants produce fruit? The fruit is called the "hip." The rose plant makes hips after the flowers fall off. People use rose hips to make jelly and tea.

In this paragraph, the word "produce" means

- a. call b. make c. round d. chop

Try your word choice in place of the unknown word.

Easter Lilies and poinsettias account for the largest quantity of potted flowering plants in Oklahoma's floriculture industry. Begonias, geraniums, impatiens and petunias are the bestselling flowering hanging baskets grown in Oklahoma.

Poinsettias must be a kind of _____
basket plant coin

Fantastic Flower

STIGMA (ONE STUDENT)

You are the stigma. The stigma takes in the pollen. Stand in the middle of the flower. Hold your arms in the air and chant:

“I want pollen. I want pollen.”

STYLE (THREE STUDENTS)

You are a style. The style is the tube which carries the pollen to the ovaries. Form a circle around the stigma, facing away. Move your hands up and down, and chant:

“I carry pollen. I carry pollen.”

STYLE (THREE STUDENTS)

You are a style. The style is the tube which carries the pollen to the ovaries. Form a circle around the stigma, facing away. Move your hands up and down, and chant:

“I carry pollen. I carry pollen.”

STYLE (THREE STUDENTS)

You are a style. The style is the tube which carries the pollen to the ovaries. Form a circle around the stigma, facing away. Move your hands up and down, and chant:

“I carry pollen. I carry pollen.”

OVARY (FOUR STUDENTS)

You are an ovary. Once pollinated, the ovary becomes the fruit produced by the plant, (e.g., apple, bean pod). Get down on your knees, facing away from the style. Move your hands and chant:

“Poof. I’m a fruit.”

OVARY (FOUR STUDENTS)

You are an ovary. Once pollinated, the ovary becomes the fruit produced by the plant, (e.g., apple, bean pod). Get down on your knees, facing away from the style. Move your hands and chant:

“Poof. I’m a fruit.”

OVARY (FOUR STUDENTS)

You are an ovary. Once pollinated, the ovary becomes the fruit produced by the plant, (e.g., apple, bean pod). Get down on your knees, facing away from the style. Move your hands and chant:

“Poof. I’m a fruit.”

OVARY (FOUR STUDENTS)

You are an ovary. Once pollinated, the ovary becomes the fruit produced by the plant, (e.g., apple, bean pod). Get down on your knees, facing away from the style. Move your hands and chant:

“Poof. I’m a fruit.”

Fantastic Flower

OVULE (THREE STUDENTS)

You are an ovule. Once pollinated the ovule becomes the seed inside the fruit. Sit on the floor, facing away from the ovary. Move your hands in and out and chant:
“Poof. I’m a seed.”

OVULE (THREE STUDENTS)

You are an ovule. Once pollinated the ovule becomes the seed inside the fruit. Sit on the floor, facing away from the ovary. Move your hands in and out and chant:
“Poof. I’m a seed.”

OVULE (THREE STUDENTS)

You are an ovule. Once pollinated the ovule becomes the seed inside the fruit. Sit on the floor, facing away from the ovary. Move your hands in and out and chant:
“Poof. I’m a seed.”

ANTHER (TWO STUDENTS)

You are an anther. The anther produces pollen. Stand on each side of the pistil (stigma, style, and ovary). Throw your hands in the air as if tossing pollen, and chant:
“Here’s your pollen. Here’s your pollen.”

ANTHER (TWO STUDENTS)

You are an anther. The anther produces pollen. Stand on each side of the pistil (stigma, style, and ovary). Throw your hands in the air as if tossing pollen, and chant:
“Here’s your pollen. Here’s your pollen.”

FILAMENT (TWO STUDENTS)

You are a filament. The filament supports the anther. Stand beside the anther with your arms crossed and body stiff, chanting:
“I support Anther. I support Anther.”

FILAMENT (TWO STUDENTS)

You are a filament. The filament supports the anther. Stand beside the anther with your arms crossed and body stiff, chanting:
“I support Anther. I support Anther.”

PETALS (SIX STUDENTS)

You are a petal. The petals form the flower. The flower petals are usually bright and pretty in order to attract bees to pollinate the flower. Form a circle around the pistil (stigma, style, and ovary) and stamen (anther and filament). Bend over, facing out, and whistle a cat call, then chant:
“Lookin’ good.”

Fantastic Flower

PETALS (SIX STUDENTS)

You are a petal. The petals form the flower. The flower petals are usually bright and pretty in order to attract bees to pollinate the flower. Form a circle around the pistil (stigma, style, and ovary) and stamen (anther and filament). Bend over, facing out, and whistle a cat call, then chant:

“Lookin’ good.”

PETALS (SIX STUDENTS)

You are a petal. The petals form the flower. The flower petals are usually bright and pretty in order to attract bees to pollinate the flower. Form a circle around the pistil (stigma, style, and ovary) and stamen (anther and filament). Bend over, facing out, and whistle a cat call, then chant:

“Lookin’ good.”

PETALS (SIX STUDENTS)

You are a petal. The petals form the flower. The flower petals are usually bright and pretty in order to attract bees to pollinate the flower. Form a circle around the pistil (stigma, style, and ovary) and stamen (anther and filament). Bend over, facing out, and whistle a cat call, then chant:

“Lookin’ good.”

PETALS (SIX STUDENTS)

You are a petal. The petals form the flower. The flower petals are usually bright and pretty in order to attract bees to pollinate the flower. Form a circle around the pistil (stigma, style, and ovary) and stamen (anther and filament). Bend over, facing out, and whistle a cat call, then chant:

“Lookin’ good.”

PETALS (SIX STUDENTS)

You are a petal. The petals form the flower. The flower petals are usually bright and pretty in order to attract bees to pollinate the flower. Form a circle around the pistil (stigma, style, and ovary) and stamen (anther and filament). Bend over, facing out, and whistle a cat call, then chant:

“Lookin’ good.”

SEPAL (FOUR STUDENTS)

You are a sepal. The sepal forms the base of the flower and holds the petals together. Lie on the floor in the shape of an X, with the feet of all four sepals forming the middle of the X. Chant:

“Keeping it together!”

SEPAL (FOUR STUDENTS)

You are a sepal. The sepal forms the base of the flower and holds the petals together. Lie on the floor in the shape of an X, with the feet of all four sepals forming the middle of the X. Chant:

“Keeping it together!”

SEPAL (FOUR STUDENTS)

You are a sepal. The sepal forms the base of the flower and holds the petals together. Lie on the floor in the shape of an X, with the feet of all four sepals forming the middle of the X. Chant:

“Keeping it together!”

Fantastic Flower

SEPAL (FOUR STUDENTS)

You are a sepal. The sepal forms the base of the flower and holds the petals together. Lie on the floor in the shape of an X, with the feet of all four sepals forming the middle of the X. Chant:

“Keeping it together!”

TEACHER/BEE

Once you have built your flower and each part is chanting its purpose, you act as the bee and pollinate the flower. Make sure the students see you take pollen from the anther and deposit it in the stigma to be carried to the ovaries and ovule. Once the flower is pollinated, it should:

Collapse to the floor with a huge sigh of relief!

