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Lesson 1: Bulb Botany

[To prepare, read Background Information](#)

Objectives

Students will:

- Learn the different parts of a bulb and what they do.
- Explore the parts of the bulb through dissection.

Central Concepts

- A bulb is a plant that grows from an underground mass of food storage tissues.
- The storage capacity of a bulb is a special adaptation for survival.

Standards addressed: [click here](#)

Materials

- bulbs (onion and/or spring-flowering bulbs)
- a knife
- cutting board
- plastic bags
- paper towels
- paper
- pencils

Discussion Questions

1. What is a bulb? (*A plant that grows from an underground mass of food storage tissues. This mass is also called a bulb.*)
2. What are the parts of a bulb and what is their function? (*embryonic leaf, stem, and flower parts – develop into leaves, stem, and flowers; fleshy scales – provide food for the young plant; basal plate – produces roots; tunic – serves as protective outer layers*)
3. Do all plants have the ability to store enough food for one growing season? (*No. For instance, annual plants focus on producing seeds and then die.*)
4. What are some of the benefits to a plant with this food storage capacity? (*It's a survival mechanism that gives a plant enough stored food to survive at least one season in poor environmental conditions.*)

In-Class Activity: Flower Dissection

* Note: Some people experience skin irritation from handling bulbs, so make sure students wash hands thoroughly after planting or wear gloves while planting.

1. Introduce students to bulbs using the details provided in the [Background Information](#). Talk about their unique ability to store enough energy to produce leaves and flowers for the next growing season.
2. Show students the example bulbs. If possible, have various types of bulbs (onions, tulips, daffodils, hyacinths, and paperwhites) so they can compare and note similarities and differences. Ask them to describe what each looks like from the outside. Instruct them to draw a picture of each type.
3. On the chalkboard or dry erase board, draw an outline of the parts of a bulb on the board. Talk about the different parts and what they do ([see Background Information](#)).
4. Cut sample bulbs in half (you can either use onions from the grocery store or spring-flowering bulbs if they are available). Place the bulbs in plastic bags* and then give students a chance to view the cut bulbs. It's best to have enough bulbs for students to each have their own to work with; alternately, have them share in small groups.



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5. Ask students to draw the inside of the bulbs and then label the different parts. Depending on the maturity of the bulb and the conditions it has been exposed to, they may be able to clearly see the young leaves and flowers. If you do not see any leaves or flowers in this batch of bulbs, try to find some more mature bulbs so they can see the difference.

Extensions

Science - As the students discovered in the botany lesson, the roots of the bulb grow from the basal plate and the shoots grow above the basal plate. So does it matter which end is up when planting? Ask students to hypothesize what they think is the best planting method for a bulb, and then as a class plant a few bulbs facing different directions. Observe the bulbs for several weeks and keep a journal of their growth. After several weeks, compare the results and make a conclusion about the hypothesis. The students should find that bulbs planted upside down use a lot of energy growing around the bulb and up and so they may not survive and/or bloom.

Math - Plant several bulbs in pots (see [Background Information](#) for information on forcing bulbs, or use paperwhites). Measure the plants daily as they grow (metric and English measure) and then chart the data on a graph. Discuss the growth patterns observed.

English - Read the book *A Flower Grows* by Ken Robbins (Dial Books, New York, NY1990) detailing the growth of an amaryllis bulb. Plant an amaryllis in the classroom and compare the observed growth with the book.

Art - Make a color wheel using pictures of bulb flowers cut from catalogs. Discuss the concepts of primary, secondary, and complementary colors.

History/Economics - Read about "tulipmania" in the [Plant of the Month](#). Discuss the effects of supply and demand on prices. Introduce the concepts of trade markets, speculation, and inflation.

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