

Sunflower Seed Lesson

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Objectives

- Learn the function of seeds
- Observe seed germination
- Learn the parts of a seedlings
- Review parts of a plant (roots, stem, leaves, flower)
- Understand that seeds form at the end of a plant's life
- Engage in the scientific method (hypothesis, observations, data collection, results)
- Learn about and engage in seed saving

Materials:

Paper towels, sunflower seeds/sunflower seed head, Ziploc bags, envelopes, crayons/colored pencils, marker to write on Ziploc bags, sprout observation sheet and/or notebook

Lesson:

1. Ask students if they saw the sunflowers growing in the garden this year. Have students name some of the sunflower's parts. This is a good exercise if your class has already been studying plant anatomy and function.

- **Roots** – sunflowers have one long taproot and many smaller lateral roots that branch out through the soil.
- **Stem** – the stem delivers moisture and nutrients to the plant; it gets stronger as the plant grows and helps support the weight of the bloom. The outer material (epidermis) of the sunflower stem becomes woody and thick as it grows bigger and protects the cells and vessels inside.
- **Leaves** – sunflower leaves can be very big. They are heart-shaped and have serrated edges. They also have very fine hairs that help them conserve water in times of drought.
- **Petals** – a sunflower is in fact a composite flower that has lots of tiny flowers growing together. There are two types of flowers on a sunflower. The outer petals are called ray florets and they are sterile (do not make seeds). The inner flowers are in the head of the sunflower, and are called disk florets; they will become the seeds after fertilization.
- **Head** – the head is home of the sunflower's reproductive organs. Each disk floret has a stamen and pistil, and will be pollinated by bees traveling from flower to flower. When ovules are fertilized seed development occurs.

2. Ask students if they know what happens to a plant at the end of its life? (They make seeds!) Discuss why plants make seeds and why seeds are important to the continuation of the species. Extra: You may choose to talk a little about the practice of seed saving, and why it is necessary. You can explain that back in the old days when people grew gardens, they didn't buy seed packets from the store every year, but instead they collected their seeds from plants at the end of a growing season.

3. Ask students what's inside a seed. Before doing the activity, talk briefly about a seed, its components, and what it needs to germinate (when seeds start to sprout and grow shoots and roots). A seed is comprised of three main things:

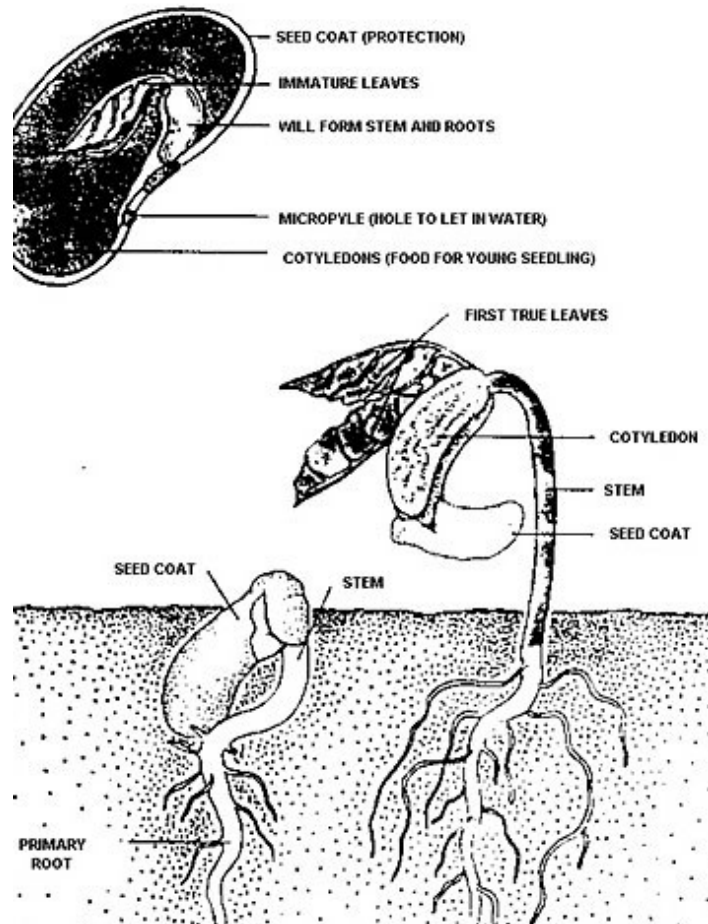
- **Seed coat** – protects embryo
- **Embryo** – will grow into a baby plant
- **Stored food** – a seed has enough nutrients stored within it in order for the plant to start growing

A sunflower is different in that it has a *husk* that protects the seed *kernel*. You may remind them that when we eat sunflower seeds we first take away the husk in order to get to the edible seed.

4. SEED ACTIVITY

Place 4-5 sunflower seeds in paper towel. Spray with water bottle to get just damp. Place in plastic bag; write name and date on outside, seal, place in moderately sunny location (not too sunny). Make sure paper towel remains damp through out week. Students will write a **hypothesis** of what they think will happen. They could answer questions like: How long will the seed take to germinate? What will grow first the roots or the stem? Also have them write down what the seed needs to germinate (moisture, a little light, stored food). Over the week(s) they will record **observations** and **collect data** (they can measure the sprout). After the seedling is fully sprouted (7-10 days), students will remove their paper towel from the bag and label the components (**results** of experiment). This is an exercise in the scientific method. There may be seeds that didn't sprout. Ask them why they think this happened. Students should label the following on their seedlings:

- **Roots**
- **Stem**
- **Cotyledon** – embryonic leaves of the plant that contain food supply for the growing plant. For sunflowers there are 2 cotyledons; some plants only have one.
- **True leaves** – may not see these unless let your sprout grow a long time; these will be above the cotyledon
- **Split seed coat** – when the seed germinates the husk of the sunflower seed will be on the growing sprout



5. SEED SAVING

Students work in small groups to pick sunflower seeds out of seed head. Students can decorate and label envelopes for their "saved seeds". Seeds can be taken home or used in next year's garden.