

Unit Organizer
5th Grade Science

Plant Structures and Processes

Colorado State Standards:

Standard 1- Students understand the process of scientific investigation and design as well as conduct, communicate about and evaluate such investigations.

Standard 3- Students know and understand the characteristics and structure of living things, the processes of life, and how living things interact with each other and their environment.

Standard 5- Students will know and understand interrelationships among science, technology and human activity and how they can affect the world.

Standard 6- Students understand that science involves a particular way of knowing and understand common connections among scientific disciplines.

Previous Unit: Classification of Living Organisms

Next Unit: Life Cycles and Reproduction

Core Knowledge Unit:

I. Structure: Non-Vascular and Vascular Plants

- Non-vascular plants (for example algae)
- Vascular plants

Vascular plants have tube-like structures that allow water and dissolved nutrients to move through the plant.

Parts and functions of vascular plants: root, stems and buds, leaves

II. Photosynthesis

- Photosynthesis is an important life process that occurs in plant cells, but not animal cells (photo= light; synthesis= putting together). Unlike animals, plants make their own food, through the process of photosynthesis.
- Role in photosynthesis of: energy from sunlight, chlorophyll, carbon dioxide and water, xylem and phloem, stomata, oxygen, sugar (glucose)

III. Reproduction

- Asexual reproduction
Example of algae
Vegetative reproduction
- Sexual reproduction by spore bearing plants (for example, mosses and ferns)

- Sexual reproduction of non-flowering seed plants: conifers, male and female cones, wind pollination
- Sexual reproduction of flowering plants (for example, peas)
 - Functions of sepals and petals, stamen (male), anther, pistil (female), ovary
 - Process of seed and fruit production: pollen, wind, insect and bird pollination, fertilization, growth of ovary, mature fruit
 - Seed germination and plant growth: monocots and dicots

Standards for Achievement and Performance:

- Can you define vascular/ nonvascular?
- Can you define photosynthesis?
- Can you define chlorophyll?
- Can you label the palisade layer?
- Can you describe the function of the palisade layer?
- Can you label and describe the function of the cambium?
- Can you label and describe the function of the cortex and pith?
- Can you label the xylem and the phloem?
- Can you describe the function of the xylem and the phloem?
- Can you label the guard cells?
- Can you describe the function of the leaves?
- Can you label the epidermis?
- Can you label the stomata?
- Can you identify the function of the stomata?
- Can you identify the five functions of the stem?
- Can you identify the three functions of the root?
- Can you draw and identify the two types of root structure?
- Can you name 4 items that plants need to survive?
- Can you write the steps to photosynthesis?
- Can you follow proper lab rules and safety procedures?
- Can you explain the difference between sexual and asexual reproduction in plants?

Character Education:

RESPONSIBILITY- taking care of equipment and using safety procedures

SELF-CONTROL- displaying appropriate and on-task behavior during experiments

COOPERATION- working together in groups during the experiments