

Rigorous Curriculum Design

Unit Planning Organizer

Subject(s)	Science
Grade/Course	6 th /Science
Unit of Study	Structures and Functions of Living Organisms
Pacing	3 weeks

Priority Essential Standards

L.1.1

Understand the structures, processes and behaviors of plants that enable them to survive and reproduce.

L.1.2

Explain the significance of the processes of photosynthesis, respiration and transpiration to the survival of green plants and other organisms.

“UNWRAPPED” Priority Standards

L.1.1

Animals and plants have a great variety of body plans and internal structures that contribute to their being able to make or find food and reproduce. The process of sexual reproduction in flowering plants takes place in the flower, which is a complex structure made up of several parts. Some parts of the flower are directly involved in fertilization and seed production. Other flower parts have functions in pollination.

A flower is made up of six parts: petals-are leaf like, usually colorful structures arranged in a circle around the top of a flower stem. Sepals are modified leaves that encase the developing flower. They are sterile floral parts and may be either green or leaf like or composed of petal like tissue. Inside the circle of petals are the stamens. A stamen is the male reproductive structure of a flower. At the tip of the stamen is the anther. The anther produces pollen that contains sperm. At the center of the flower, attached to the top of the flower stem lie one or more pistils. The pistil is the female structure of the flower. The bottom portion of the pistil enlarges to form the ovary, a structure with one or more ovules, each containing one egg. When fertilization occurs the ovary grows into the fruit or vegetable. The length of night or dark period controls flowering.

L.1.2

One of the most general distinctions among organisms is between plants, which use sunlight to make their own food (photosynthesis) and animals, which consume energy-rich foods. Photosynthesis and cellular respiration are complementary processes. Plants carry on photosynthesis and cellular respiration where food is broken down into energy. The requirements of one process are the products of the other. Leaves have an epidermis with a waxy cuticle and stomata that help prevent water loss. Guard cells that surround and control the size of the opening in stomata. The loss of water through the stomata is called transpiration. The opening and closing of guard cells regulate transpiration.

Photosynthesis	Cellular Respiration
Food accumulated	Food broken down
Energy from sun stored in glucose	Energy of glucose released
Carbon dioxide taken in	Carbon dioxide given off
Oxygen given off	Oxygen taken in
Produces glucose	Produces carbon dioxide and water
Goes on only in light	Goes on day and night
Occurs only in the presence of chlorophyll	Occurs in all living cells

“Unwrapped” Concepts (students need to know)	“Unwrapped” Skills (students need to be able to do)	Bloom’s Taxonomy Levels
<ul style="list-style-type: none"> Parts and functions of a flower. Fertilization process. Plant features required for survival. Ingredients required for photosynthesis. Products of photosynthesis. 	Dissect and identify parts of a flower.	Apply
	Classify plants based on how the plant pollinates.	Analyze
	Explain the relationship between photosynthesis, respiration and transpiration.	Analyze

Essential Questions
<ul style="list-style-type: none"> How are fruits and vegetables replenished? Identify the structures and functions of flowering plants. How do plants make their own food? How do plants use the food they make during photosynthesis? How do plants change carbon dioxide to oxygen?

Informal Progress Monitoring Checks
<ul style="list-style-type: none"> Ticket out the door sample questions: draw and label parts of a flowering plant; what’s the function of the stamen, pistil, sepal, anther etc. Quick-write: Explain the role of the pistil in plant reproduction. Four Corners or Middle of the road: Have students to separate into groups based on their level of understanding of the topic.

Engaging Learning Experiences**Learning Activities Using
Text or Program**

L.1.1

Technology

http://www.bbc.co.uk/schools/scienceclips/ages/9_10/life_cycles.shtml<http://www.middleschoolscience.com/flower.pdf>

Instructional Resource

L.1.1

<http://www.discoveryeducation.com/teachers/free-lesson-plans/all-about-plants.cfm>

L.2.2

<http://www.discoveryeducation.com/teachers/free-lesson-plans/the-importance-of-tropisms.cfm>

L.2.1 & L.2.3

www.teachingboxes.org

Unit name: Feeding Frenzy—see Lesson 1 & 2