

SEVENTH GRADE LIFE SCIENCES

THEME: LIFE AROUND US

Goal

The life sciences will emphasize the processes of life. Students will explore the characteristics and diversities of organisms and the interaction of organisms with the environment. Knowledge of basic life science gives students an understanding of the world around them.

1. Science Processes and Inquiry – The student will engage in investigations that lead to the discovery of science concepts.

- a. Use appropriate tools and technology to perform tests, collect and display data.
- b. Use a variety of resources to collect information for research.
- c. Select the most logical conclusion for the given experimental data.
- d. Place an object, organism, or event into a classification system.
- e. Communicate the steps and results from an investigation in written reports and verbal presentations.
- f. Practice safety procedures in all science activities.

2. Cells – The student will identify cells as the basic structure and function in living things.

- a. Determine that all living organisms are composed of cells. Analyze structures, functions, and processes within plant and animal cells:
 - *Energy
 - *Waste Removal
 - *Reproduction
 - *Movement
 - *Specialized Cells
- b. Determine that the systems of living things are organized by levels of complexity:
 - *Cells
 - *Tissues
 - *Organs
 - *Systems
- c. Compare/contrast the characteristics that distinguish plant cells from animal cells.

3. Cell Division and Genetics – The student will explore how traits are passed from one generation to another.

- a. Analyze cell division in asexual reproduction (e.g. mitosis, diploid cells).
- b. Analyze cell division in sexual reproduction (e.g. meiosis, haploid cells). Explain the significance of chromosomes, genes, and DNA in the cells of an organism.
- c. Explain how genetic changes occur over time:
 - *Adaptation
 - *Mutation
 - *Extinction
- d. Explain the theory of natural selection (e.g. trait variation).
- e. Recognize how Punnet squares are used for determining probability of genetic outcomes.

4. Reproduction and Life Cycles – The student will determine that reproduction is essential for a species' survival.

- a. Explain the difference between asexual and sexual reproduction.
- b. Identify the reproductive organs in animals:
 - *Testes (sperm)
 - *Ovaries (eggs)
- c. Identify the stages of embryonic development:
 - *Egg
 - *Zygote
 - *Embryo
 - *Fetus
 - *Newborn
- d. Explain the growth stages in organisms:
 - *Infancy
 - *Childhood
 - *Adolescence
 - *Adulthood
- e. Identify reproductive processes and parts for Angiosperms.

5. Body Systems – The student will describe the main functions of the animal/human body systems.

- a. Identify the major organs and structures of the:
 - *Circulatory System – heart, red and white blood cells
 - *Respiratory System– lungs, oxygen/carbon dioxide exchange
 - *Reproductive System – fertilization, pregnancy
- b. Describe changes that occur in human adolescence (e.g. release of hormones).

6. Plants and Animals – The student will classify living things.

- a. Identify the binomial nomenclature system.
- b. Identify the classification system:
 - *Kingdom
 - *Phylum
 - *Class
 - *Order
 - *Family
 - *Genus
 - *Species
- c. Identify and describe characteristics from the six kingdoms:
 - *Archaeobacteria
 - *Eubacteria (formerly Moneran)
 - *Protista (formerly Moneran)
 - *Fungi
 - *Plants
 - *Animals

- d. Compare/contrast vertebrates and invertebrates.
- e. Compare/contrast characteristics of endothermic and ectothermic animals.

7. Ecosystems – The student will develop an understanding of populations of organisms.

- a. Understand the interdependence of living things and their environments. Describe the relationships within a community:
 - *Symbiosis
 - *Parasitism
 - *Competition
 - *Predator/Prey
- b. Identify the relationship between producers, consumers and decomposers in a community.
- c. Describe how ecosystems can be affected by changes in the environment and by man-made changes.

Experiential Location Suggestions:

Parks
Nurseries
Hospitals
Zoo
Health Center
Ponds
Lakes
Creeks
Ecosystems

Other Theme Ideas:

Balance
Interdependence
Ecology
Function
Structure