

Science Curriculum - Grade 8

GRADE EIGHT ESSENTIAL SKILLS

Content Skills - Students will demonstrate an understanding of the interdependence of all life. Students will demonstrate an understanding that all matter has atomic structure that can be transformed.

- **Process Skills/Scientific Method** - Children will use the scientific method in our inquiry-based activities in all grade levels and content areas in the science curriculum
- **Scientific Technology & Tools** - Students will use appropriate tools, technology, and techniques to gather, analyze, interpret and share data. (Thermometers, rulers (inch & CM), magnifying glasses, simple microscopes, balances, computers and safety goggles)
- **Science Safety** - Students will follow safety instructions, directions, and use appropriate safety equipment

LIFE SCIENCE CONTENT

Interdependence of Life Systems

- Students will create a concept map that illustrates the interdependence of all life in symbiotic relationship including mutualism, commensalism, and food webs
- Students will explain in written, graphic, or oral presentation, the significance of human impact on the environment
- Identify Earth resources used in their life
- Students will explain in written, graphic, or oral presentation, how organisms at the micro level, impact those at the macro level
- Students will relate the different members of the 5 kingdoms to their habitat and explain the interdependence among the five groups
- Students will classify a variety of organisms based on their characteristics and use this knowledge to organize the information of the diversity of life forms
- Students will describe/identify random differences between individuals of the same species of plant or animal
- Describe the major functions of the living cell and discuss how different groups of cells perform interrelated functions in any organism
- Students will collect data on inherited characteristics and use the data to explain how traits are passed from generation to generation
- Students will explain the difference between acquired and inherited characteristics or traits of an organism
- Students will describe/identify similarities and differences among multiple offspring of same parents, and between parents and offspring, e.g. Mitosis and meiosis
- Explain how new genetic traits can arise and become established in a population e.g. Mutations of DNA, new gene linkages, crossing over
- Relate different kinds of animals and plants to their habitat by observing their physical characteristics
- Relate common cycles such as the water cycle, the nitrogen cycle, and the carbon cycle to each other

• **Note:** Greater emphasis on laboratory reporting, research, and lab activities in both

seventh and eighth grade science content areas.

PHYSICAL SCIENCE CONTENT

Chemistry - Structure and Properties of Matter

- Students will diagram, label, and model various complex atoms including the seven key elements of living organisms
- Students will explain properties of electrons, protons and neutrons
- Students will distinguish between elements and compounds
- Students will explain how atoms bond to form new compounds
- Students will diagram the flow of a chemical change including endothermic and exothermic reactions
- Students will identify properties and types of solutions
- Students will define matter
- Students will classify substances according to physical and chemical properties
- Students will perform an experiment to demonstrate common properties of gases, liquids and solids
- Students will describe and record how treatments affect substances (such as heating, wetting, bending or combining with other materials)
- Students will perform and describe experiments which illustrate the difference between physical and chemical changes in substances
- Students will understand the organization and use of the Periodical Table
- Students will understand and identify by pH of acids, bases, and salts
- Students will demonstrate understanding and measurement of electrochemical cells