Express Science
Middle School Science
Life Science

Curriculum Features

The Express Science Middle School curriculum is designed as a survey of science topics in order to provide a solid foundation in all of the Sciences. Important concepts are developed in a sequential and stepwise manner that is understandable by all students. The modules are written to increase student interaction by providing a readable, engaging, and informative instructional curriculum that is ready for use in the classroom.

Life Science

Life Science offers a series of units that explain the dynamic nature of living things, their interactions, and the results of the interactions. Life Science includes modules that provide a comprehensive analysis of the life forms on Earth, how they are made and function, and how they interact with each other and their environment. The students will construct an understanding of how their bodies function, how that function is related to individual cells, and how they and other organisms fit into their environment.

Formative assessments are included with each module as a valuable instructional strategy. Summative assessments are included with each unit as a confirmation of student success.

A. Diversity of Life

This unit supplies evidence verifying that the internal and external features of organisms determine their degree of kinship. Modules include techniques for establishing relatedness and classification models. This unit provides the students with an understanding of the organization of living organisms and how their degree of relatedness is determined by their DNA.

1. Classification
2. Classification Keys
3. Microscopic Organisms
4. Plants
5. Animals
6. Organisms that are not Plant or Animal
7. Anatomical Evidence for Kinship
8. Biochemical Evidence for Kinship

B. Cellular Life Science

This unit summarizes the knowledge that all living organisms are composed of cells that carry out all of the basic life functions. The modules combine to provide an enduring understanding of the cell and all life functions. The modules explain the history that contributes to the cell theory, describe the structure/function of the cellular organelles, and build the connections of cells to tissues, organs, and life functions. The students will construct an understanding of how cells function, their specialized structures, and how the cellular organelles interact.

1. History of the Cell Theory
2. Cellular Organelles
3. Nucleus and Functions
4. Mitochondria and Functions
5. Chloroplasts and Functions
6. Cell Membrane and Functions
7. Ribosomes and Functions
8. Cell Cycle
9. Life Functions
10. Cells, Tissues, and Organs

C. Systems

This unit addresses the systems of the human body. It continues the progression of thought from the cellular to the organ system level. Each module describes specific systems such as the circulatory, digestive, and reproductive system. Students will understand the anatomy and physiology of their body.

1. Circulatory
2. Digestive
3. Respiratory
4. Muscular
5. Skeletal
6. Excretory
7. Nervous
8. Endocrine

D. Genetics

This unit explains the various ways that the genetic information is passed from parent to offspring in different living organisms. Module topics expand an understanding of genetics from the molecular to the organism level including, DNA and RNA, sexual and asexual reproduction, variation and genetic diversity. Students will learn the fundamentals of inheritance and how DNA provides a recipe for the inheritance of all characteristics and traits.

1. DNA and RNA
2. Genes, Chromosomes, and DNA
3. Sexual Reproduction
4. Asexual Reproduction
5. Selective Breeding
6. Variation
7. Genetic Diversity

D. Evolution

This unit explains how the growth, survival, and reproduction of organisms and species depend upon the interaction of the organisms and the physical conditions that are characteristic of that environment. The modules address specific concepts that address the effect of the environment on living organisms, such as natural selection, environmental pressures, and adaptations. This unit will allow students to understand the environmental forces that affect the ability of organisms to survive and reproduce at varying rates.

1. Inheritance and Similarities
2. The Effects of Environmental Pressures
3. Competition
4. Favorable Traits and Reproduction
5. Selective Breeding
6. The Effects of Environmental Changes
7. Fossil History
8. Adaptations
9. Extinction
10. Natural Selection

E. Transfer of Matter and Energy

This unit addresses the transfer and transformation of matter and energy that links organisms to one another and their environment. The modules address cellular reactions such as photosynthesis and cellular respiration. Food webs, trophic levels, and the cycling of resources are topics that describe the interaction of living organisms and the transfer of matter and energy through the ecosystem. Students will be able to explain complex cellular reactions and understand the movement of matter and energy between the living and non-living environment.

1. Photosynthesis
2. Cellular Respiration
3. Food Chains
4. Food Webs
5. Trophic Levels
6. Energy Pyramids
7. Water Cycle
8. Nitrogen Cycle
9. Carbon Cycle

F. Ecology

This unit provides supporting reasons to explain how the number of organisms that inhabit an ecosystem depends on the physical conditions, the availability of resources, and the interaction of the organisms. Specific modules address environmental factors, models of organism interaction, and the effects of pollution. This unit will increase the students' knowledge of the interdependence of living organisms with each other and their environment.

1. Environmental Pressures and Populations
2. Biotic and Abiotic factors
3. Factors That Affect Populations
4. Mutualism, Commensalism,
5. Predation
6. Competition
7. Biomes
8. Biodiversity
9. Air Quality
10. Water Quality
11. Toxic Chemicals