

GRADE 5 SCIENCE

The science curriculum for grade five encourages students to develop an appreciation and understanding for various scientific concepts through a systematic approach: lecture, observation and hands on experiences. Hopefully, this program of study will encourage students to begin to view the world like a scientist does: asking questions, creating hypotheses, seeking answers, collecting data, measuring, making observations, discussing findings etc. By studying these topics, students will gain the building blocks for deeper understanding, that will prove to be helpful at a later time.

Classifying Living Things

Students will:

- describe kingdom and species
- identify the five large groups (kingdoms) that scientists have divided all living things into: Plant, Animal, Fungus, Protist, and Moneran
- identify and become familiar with each of the smaller groups that the kingdoms are divided into: Kingdom, Phylum, Class, Order, Family, Genus, and Species
- identify the five different classes and major characteristics of vertebrates
- identify the six different classes and major characteristics of invertebrates

Cells: Structures and Processes

Students will:

- learn that all living things are made up of cells, the building blocks of life
- identify and describe the differences between a plant and animal cell
- become familiar with and be able to describe the functions of the plant and animal cell's structures (cell wall, cell membrane, cytoplasm, vacuole, mitochondrion, chloroplast, nucleus, nuclear membrane, chromatin)

Plant Structures and Processes

Students will:

- describe the differences between vascular and non vascular plants regarding parts and functions
- learn about the important process of photosynthesis that occurs in plant cells in order for plants to make their own food
- learn about the process of photosynthesis that involves sunlight, chlorophyll, carbon dioxide, water, xylem, phloem, stomata, oxygen, and sugar (glucose)
- differentiate between asexual reproduction (vegetative- runners, bulbs, and cuttings) and sexual reproduction (spore-bearing plants (ferns), non-flowering seed plants (conifers), and flowering plants
- learn about and understand the many details of the different steps in the plant-seed cycle that aids in seed and fruit production (germination, pollination, fertilization, and seed dispersal)
- distinguish the similarities and differences between monocot and dicot seeds (number of cotyledons (embryo), stored food (endosperm), and seed coat)

Ecosystems

Students will:

- explain ecosystems, communities, and populations
- describe how food chains, food webs, and energy pyramids work
- explain how populations compete and are limited by the resources they need
- define habitat, niche, symbiosis, commensalisms, mutualism, and parasitism
- explain structural and behavioral adaptations
- describe plant and animal adaptations including camouflage and mimicry
- study in depth the tidepool ecosystem and visit one as a class
- study their local environment

Life Cycles and Reproduction

Students will:

- gain an understanding of the life cycle: development of an organism from birth to growth, reproduction (asexually or sexually), and death
- learn that all living things reproduce themselves when special male and female cells join to form a fertilized egg

The Human Body: Endocrine System

Students will:

- watch a video and discuss, with the school nurse, the changes that occur during puberty, as well as the reproductive organs involved in the process
- learn that the human body has two types of glands: ductless and duct
- focus their study on the endocrine system, where glands release hormones into the bloodstream which help to control different body processes
- describe the glands' basic functions (pituitary, thyroid, parathyroid, adrenal, pancreas, ovaries, testes)

Earth Science

Students will:

- define the Earth's layers
- discuss how the theory of plate tectonics explains continental drift
- describe weathering
- discuss the relationship between erosion and deposition
- define how Earth's shape and tilt affect temperature and winds
- explain how clouds and precipitation form
- summarize how air masses and fronts affect weather
- explain how severe storms form
- explain what determines an area's climate
- summarize the factors that affect climate

Physical Science: Matter and Change

Students will:

- learn that electrically charged particles come together to make atoms; atoms come together to make molecules; molecules create elements, and elements create compounds
- memorize some well known elements and their symbols
- read the periodic table of elements, a chart that organizes elements with common properties, atomic symbols, and atomic number
- learn that the periodic table of elements is divided into three categories of elements: metals, nonmetals, and metalloids
- realize that atoms are constantly in motion because electrons are always in motion, even in solids, liquids, and gasses
- learn that some elements combine with others to create compounds
- distinguish between chemical and physical changes of substances
- describe matter and the three states of matter: solid, liquid, and gas
- measure and calculate density
- explain the structure of matter, elements and atoms
- describe the properties of metals, nonmetals and metalloids
- determine whether an element is metal, nonmetal or metalloid
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Physical Science: Forces and Energy

- understand the relationship between position, motion, velocity, and acceleration
- learn about balanced and unbalance forces
- understand how gravity and friction affect motion
- learn how to apply Newton's three laws of motion
- define work and energy

Science Biographies

Students will:

- become familiar with the scientists: Galileo, Newton, Carl Linnaeus and others throughout their studies

Materials

Student's main text is Science a Closer Look by Macmillan / McGraw-Hill

Science A Closer Look Transparencies and Visual Literacy

Science A Closer Look Assessments

Science A Closer Look Vocabulary Cards

- Student packets created from a variety of teacher resources
- Teacher made notes, graphic organizers, worksheets, tests, quizzes, study guides, and games
- Arts and crafts materials for various projects related to each topic of study
- A variety of books for the classroom library to enhance the topics covered in the curriculum

- Videos from our school library and United Streaming to enhance areas of study

Instruction

The teacher will:

- lead class lectures and discussions
- conduct mini experiments and demonstrations
- assign independent reading and assignments based on class lecture and discussion
- assign independent or cooperative group projects to be completed in class
- read additional books in class to enhance concepts learned
- show videos to enhance the concepts learned
- facilitate games created for each unit of study
- use Smartboard programs to enhance topics

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Updated: February 9, 2011