Science

Revised 2014

In Science, children make discoveries about their environment and themselves. Through the use of the scientific method and modern technology students hypothesize, investigate, test, and draw conclusions.

Because science deals with phenomena and objects that are part of a child's daily life, it is a subject that engenders enthusiasm in the student. By building on a curiosity about the world and how it works, science classes can help students make wiser decisions in the areas of personal health and social issues as well as develop skills in gathering, categorizing, quantifying, developing, and interpreting information. A good science program from pre-kindergarten through eighth grade will also help students make realistic and informed decisions about careers in science, engineering, and technology.

In a Catholic school, students of science will also learn that as individuals created by God, they must take responsibility for their actions and must protect their immediate environment, the planet Earth, and that part of space affected by mankind.

PROGRAM GOAL I: **TOOLS OF SCIENCE**

PROGRAM OBJECTIVES:

A. Develops proper attitiudes toward science
B. Develops skills used in gathering information
C. Develops skills used in organizing, understanding, and applying information and concepts
D. Develops skills used in analyzing, synthesizing, and evaluating information and concepts

SKILL LEVELS:

I-Introduce
D-Develop
M-Master/Maintain

7*~Life Science
8*~Earth, Space, Physical Science

SUBJECT OBJECTIVES:		GRADE LEVEL								
		K	1	2	3	4	5	6	7*	8*
A.	ATTITUDE TOWARD SCIENCE									
A1.	Respects and values all forms and stages of life	I	D	D	D	D	D	D	D	D
A2.	Exhibits wonder at God's creation	I	D	D	D	D	D	D	D	D
A3.	Values natural resources	I	D	D	D	D	D	D	D	D
A4.	Exhibits concern about global problems: hunger, disease, pollution, and energy	I	D	D	D	D	D	D	D	D
A5.	View science as inquiry, process, and change	I	D	D	D	D	D	D	D	D
A6.	Acquires information concerning science related careers	I	D	D	D	D	D	D	D	D
A7.	Recognizes how scientific advances have changed our world			I	D	D	D	D	D	D
B.	GATHERING INFORMATION SKILLS									
B1.	Observes objects and phenomena	I	D	D	D	D	D	D	D	D
B2.	Names and counts objects	I	D	D	M	M				
B3.	Uses metric system		I	D	D	D	D	D	D	D
B4.	Estimates and measures the size, mass, and volume of objects	I	D	D	D	D	D	D	D	D
B5.	Collects specimens	I	D	D	D	D	D	D	D	D
B6.	Classifies objects	I	D	D	D	D	D	M	M	M
B7.	Records data	I	D	D	D	D	D	M	M	M
B8.	Reports data graphically	I	D	D	D	D	D	D	D	D
B9.	Identifies variables that affect investigations				I	D	D	D	D	D
B10.	Recognizes and uses proper vocabulary	I	D	D	D	D	D	D	D	D
B11.	Uses common materials appropriately for laboratory experiments or demonstrations	I	D	D	D	D	D	D	D	D

SUBJECT OBJECTIVES:		GRADE LEVEL								
		K	1	2	3	4	5	6	7*	8*
B12.	Organizes information through note taking and outlining					I	D	D	D	D
B13.	Uses ocular equipment properly and accurately			I	D	D	D	D	D	D
B14.	Uses dissecting tools properly and accurately						I	D	D	D
B15.	Follows safety rules related to lab activities	I	D	D	D	D	D	D	D	D
C.	UNDERSTANDING AND APPLICATION OF SKILLS									
C1.	Identifies, describes, and classifies the properties of objects and phenomena	I	D	D	D	D	D	D	D	D
C2.	Compares and contrast objects and phenomena	I	D	D	D	D	D	D	D	D
C3.	Sequences objects and events	I	D	D	D	D	D	D	D	D
C4.	Estimates results	I	D	D	D	D	D	D	D	D
C5.	Predicts outcomes	I	D	D	D	D	D	D	D	D
C6.	Recognizes cause-and-effect relationships	I	D	D	D	D	D	D	D	D
C7.	Recognizes space-and-time relationships	I	D	D	D	D	D	D	D	D
C8.	Writes lab reports			I	D	D	D	D	D	D
D.	USING THE SCIENCTIFIC METHOD									
D1.	Makes inferences		I	D	D	D	D	D	D	D
D2.	Forms hypotheses	I	D	D	D	D	D	M	M	M
D3.	Determines procedures			I	D	D	D	D	D	D
D4.	Follows procedures	I	D	D	D	D	D	D	M	M
D5.	Controls variables				I	D	D	D	D	D
D6.	Interprets data, graphs, tables, etc.	I	D	D	D	D	D	D	D	M
D7.	Draws conclusions	I	D	D	D	D	D	D	D	D
D8.	Makes deductions			I	D	D	D	D	D	D
D9.	Makes generalizations from obtained data					I	D	D	D	D
D10.	Makes applications				I	D	D	D	D	D
D11.	Forms models	I	D	D	D	D	D	D	D	D
D12.	Proposes theories					I	D	D	D	D

PROGRAM GOAL II: **EARTH AND SPACE SCIENCE**

PROGRAM OBJECTIVES:

A. Astronomy
B. Meteorology
C. Geology
D. Oceanography

SKILL LEVELS:

I-Introduce
D-Develop
M-Master/Maintain

7*~Life Science
8*~Earth, Space, Physical Science

SUBJECT OBJECTIVES:		GRADE LEVEL								
		K	1	2	3	4	5	6	7*	8*
A.	ASTRONOMY									
A1.	Defines astronomy as the study of solid and gaseous bodies in space and their interrelationships				I	D	M	M	M	M
A2.	Relates astronomical discoveries and concepts generated in various ancient civilizations				I	D	D	D	D	D
A3.	Knows the contributions of famous and current astronomers				I	D	D	D	D	D
A4.	Identifies various theories about the origins of the universe and solar system						I	D	D	M
A5.	Realizes that the study of astronomy is continuing and changing				I	D	D	D	D	D
A6.	Defines galaxies and identifies the types of galaxies					I	D	D	D	D
A7.	Knows that our solar system is located in the Milky Way galaxy and identifies its characteristics					I	D	D	M	M
A8.	Identifies the properties and formation of the phenomenon known as "black holes"							I	D	D
A9.	Defines, identifies, and locates selected constellations			I	D	D	D	D	D	D
A10.	Defines and identifies the makeup of a nebulae							I	D	D
A11.	Knows how to locate the north star (Polaris) by using the Big Dipper			I	D	D	M	M	M	M
A12.	Locate and describe properties of significant stars				I	D	D	D	D	D
A13.	Compares and contrasts the sun to other stars in size, mass, temperature, and color				I	D	D	M	M	M
A14.	Creates models of various objects located in space			I	D	M	M	M	M	M

SUBJECT OBJECTIVES:		GRADE LEVEL								
		K	1	2	3	4	5	6	7*	8*
A15.	Understands the relationship between the position of the sun and the position of shadows	I	D	D	D	D	M	M	M	M
A16.	Demonstrates the relative positions of the earth, moon, and sun during a solar and lunar eclipse				I	D	D	M	M	M
A17.	Understands the movements and tilt of the earth (in relationship to the sun) affect the seasons; length of day, night, and year; temperatures and climate, etc.			I	D	D	D	D	D	D
A18.	Demonstrates that the sun can be used to determine direction and the time of day			I	D	D	D	M	M	M
A19.	Defines equinox and solstice							I	D	D
A20.	Defines sunspots and the effects of solar flares on the earth					I	D	D	D	D
A21.	Describe various methods of capturing the sun's energy for use on the earth			I	D	D	D	D	D	D
A22.	Knows that nuclear reactions (fusion) within the sun are the sun's primary energy source								I	D
A23.	Knows that the earth revolves and rotates simultaneously			I	D	D	M	M	M	M
A24.	Knows the seasons of the year and their characteristics	I	D	D	M	M	M	M	M	M
A25.	Knows the names of the planets in the solar system and their characteristics (length of day, sixe, number of stars, composition of atmosphere, distance from the sum	I	D	D	D	D	D	D	D	D
A26.	Knows that the moon is the earth's natural satellite	I	D	D	D	M	M	M	M	M
A27.	Describes the physical features of the moon	I	D	D	D	D	D	D	D	D
A28.	Knows the phases of the moon	I	D	D	D	D	D	D	D	D
A29.	Names and demonstrates the relative positions of the earth, moon, and sun during phases of the moon				I	D	D	D	D	D
A30.	Describes phenomena which illustrates the moon's gravitational interaction with the earth (i.e. moon's orbit, earth's tide, etc.)					I	D	D	D	D
A31.	Describes the conditions that affect past and current manned space flights and satellites (temperature, weightlessness, radiation, food and water)				I	D	D	D	D	D
A32.	Knows the historical development of the space program							I	I	I

SUBJECT OBJECTIVES:		GRADE LEVEL								
		K	1	2	3	4	5	6	7*	8*
A33.	Describes the main characteristics of other natural objects in the solar system (comets, meteoroids, asteroids, etc.)					I	D	D	D	D
A34.	Describes the difference between meteor and meteorite					I	D	D	D	D
A35.	Knows the relationship between meteors and comets					I	D	D	D	D
A36.	Describes the main characteristics and uses of instruments used by astronomers					I	D	D	D	D
B.	METEOROLOGY									
B1.	Defines Meteorology					I	D	D	D	D
B2.	Knows the historic and current contributions to the development of meteorological science and technology					I	D	D	D	D
B3.	Demonstrates how to measure air pressure					I	D	D	D	D
B4.	Describes the differences in air pressure brought about by changes in altitude or moisture content of the air					I	D	D	D	D
B5.	Identifies the various gases that comprise the atmosphere					I	D	D	D	D
B6.	Describes the main characteristics of the various layers and temperature zones of the atmosphere							I	D	D
B7.	Describes the "Greenhouse Effect"					I	D	D	D	D
B8.	Knows that warm air rises and cold air sinks				I	D	D	M	M	M
B9.	Describes the causes and effects of temperature inversions							I	D	D
B10.	Knows that land and water absorb and retain heat at different rates					I	D	D	D	D
B11.	Defines radiation, conduction, and convection in terms of heat energy transfer					I	D	D	D	D
B12.	Defines of moisture present in the air					I	D	D	D	D
B13.	Describes the effect that temperatures and pressure have on the amount of moisture present in the air					I	D	D	D	D
B14.	Demonstrates how to measure relative humidity and the dew point						I	D	D	D
B15.	Describes the progression of the water cycle				I	D	D	D	M	M
B16.	Describes how clouds are formed			I	D	D	D	D	D	D
B17.	Names the different types of clouds				I	D	D	D	D	D

SUBJECT OBJECTIVES:		GRADE LEVEL								
		K	1	2	3	4	5	6	7*	8*
B18.	Lists the main characteristics of the various cloud types					I	D	D	D	D
B19.	Defines fog			I	D	M	M	M	M	M
B20.	Defines dew and frost				I	D	M	M	M	M
B21.	Describes the conditions needed to produce fog, dew, and frost					I	D	D	D	D
B22.	Lists the main types of precipitation	I	D	D	D	D	M	M	M	M
B23.	Describes the main characteristics of the various types of precipitation	I	D	D	D	D	D	M	M	M
B24.	Defines air masses						I	D	D	D
B25.	Names the major air masses						I	D	D	D
B26.	Describes the main characteristics of the major air masses (i.e. temperature, humidity, etc.)						I	D	D	D
B27.	Describes the major characteristics and causes of hurricanes, cyclones, tornadoes, and thunderstorms					I	D	D	D	D
B28.	Describes safety precautions to take in various storm situations	I	D	D	D	D	D	D	D	D
B29.	Defines lightning and thunder		I	D	D	D	M	M	M	M
B30.	Describes the causes of lightning and thunder					I	D	D	D	D
B31.	Defines winds			I	D	D	D	M	M	M
B32.	Describes winds in relation to "high" and "low" pressure areas					I	D	D	D	D
B33.	Understands how low and high pressure affects weather					I	D	D	D	D
B34.	Describes land breezes and sea breezes					I	D	D	D	D
B35.	Describes how the rotation of the earth affects winds						I	D	D	D
B36.	Defines "Coriolis Effect"							I	D	D
B37.	Knows the direction of air flow in the northern hemisphere within a high pressure area and a low pressure area						I	D	D	D
B38.	Knows the various devices used to measure wind speed and direction						I	D	D	D
B39.	Demonstrates how to measure wind speed and direction						I	D	D	D
B40.	Defines windward and leeward							I	D	D
B41.	Describes the jet stream and its effect on the weather							I	D	D
B42.	Distinguishes between weather and climate				I	D	D	D	D	D

SUBJECT OBJECTIVES:		GRADE LEVEL								
		K	1	2	3	4	5	6	7*	8*
B43.	Describes the characteristics of the various climate conditions on the earth				I	D	D	D	D	D
B44.	Demonstrates how to record daily weather conditions at specified times	I	D	D	D	D	D	D	D	D
B45.	Demonstrates how to use a weather map					I	D	D	D	D
B46.	Describes the function and use of the major weather measurement instruments						I	D	D	D
C.	GEOLOGY									
C1.	Defines geology as the science of the earth, its processes, its forms, and its relationships to other physical sciences				I	D	D	M	M	M
C2.	Knows some of the contributions of historic and current geologists					I	D	D	D	D
C3.	Knows significant data related to the earth's size and shape					I	D	M	M	M
C4.	Describes the main characteristics of the earth's layers				I	D	D	D	M	M
C5.	Interprets diagrams representing the earth's interior structure					I	D	D	D	D
C6.	Distinguishes the properties of the earth's crust from the properties of the other layers					I	D	D	D	D
C7.	Defines terms relating to gross surface features (i.e. continent, land mass, ocean, sea, etc.)		I	D	D	D	D	M	M	M
C8.	Knows the approximate proportion of land to water on the earth's surface		I	D	D	D	D	M	M	M
C9.	Identifies various kinds of land and water formations (i.e. hills, mountains, valleys, plains, rivers, bays, islands, etc.)		I	D	D	D	D	M	M	M
C10.	Interprets information about the surface of the earth from maps and globes			I	D	D	D	D	D	D
C11.	Describes characteristics and properties common to minerals				I	D	D	D	D	D
C12.	Knows structural characteristics by which minerals are classified and named					I	D	D	D	D
C13.	Uses conventional scientific names for common minerals					I	D	D	D	D
C14.	Identifies minerals by testing their chemical and physical properties					I	D	D	D	D
C15.	Diagram and explains the rock cycle					I	D	D	D	D

SUBJECT OBJECTIVES:		GRADE LEVEL								
		K	1	2	3	4	5	6	7*	8*
C16.	Differentiates between igneous, sedimentary, and metamorphic rocks				I	D	D	D	D	D
C17.	Identifies the main characteristics of igneous, sedimentary, and metamorphic rocks				I	D	D	D	D	D
C18.	Describes how igneous, sedimentary, and metamorphic rocks are formed					I	D	D	D	D
C19.	Knows the processes by which fossil fuels such as coal, petroleum, and natural gas are formed				I	D	D	D	D	D
C20.	Describes the characteristics of extraterrestrial rocks (i.e. moon rocks, meteorites, etc.)						I	D	D	D
C21.	Describes the physical properties common to soil				I	D	D	D	D	D
C22.	Knows how soils may be classified				I	D	D	D	D	D
C23.	Distinguishes between topsoil, subsoil, and bedrock				I	D	D	D	D	D
C24.	Describes how to measure the Ph of soil							I	D	D
C25.	Defines volcanism							I	D	D
C26.	Lists the characteristics of volcanic materials (i.e. magma, lava, cinders, ash, etc.)					I	D	D	D	D
C27.	Describes the theories related to the causes of volcanism and their effects							I	D	D
C28.	Defines extrusive and intrusive activity with regard to volcanism							I	D	D
C29.	Describes the relationship between volcanism, earthquakes, and mountain building							I	D	D
C30.	Describes the main causes of earthquakes					I	D	D	D	D
C31.	Describes faults					I	D	D	M	M
C32.	Describes epicenter					I	D	D	D	D
C33.	Describes how earthquakes cause tidal waves					I	D	D	D	D
C34.	Describes how seismographs measure and record intensities of earthquakes					I	D	D	D	D
C35.	Knows that the Richter Scale measures intensities of earthquakes					I	D	D	M	M
C36.	Describes how the study of earthquakes provides information about the structure of the earth's interior					I	D	D	D	D
C37.	Describes the characteristics of the continental plates							I	D	D
C38.	Research the changes of the earth due to earthquakes					I	D	D	D	D

SUBJECT OBJECTIVES:		GRADE LEVEL								
		K	1	2	3	4	5	6	7*	8*
C39.	Describes Plate Tectonic Theory					I	D	D	D	D
C40.	Defines continental drift							I	D	D
C41.	Describes how mountains are formed					I	D	D	D	D
C42.	Identifies the characteristics of volcanic and folded mountains							I	D	D
C43.	Defines terms related to faulting and folding (i.e. fracturing, anticline, syncline, etc.)							I	D	D
C44.	Compare and contrast Earth events (volcanoes, earthquakes, etc. results, causes, timeframe, etc.				I	D	D	D	D	D
C45.	Identifies the different types of weathering		I	D	D	D	D	D	D	D
C46.	Describes the ways in which weathering conditions effect the earth				I	D	D	D	D	D
C47.	Describes the causes and effects of erosion				I	D	D	D	D	D
C48.	Identifies methods used to prevent or reduce the impact of earth events				I	D	D	D	D	D
C49.	Describes how material is transported by running water				I	D	D	D	D	D
C50.	Distinguishes a young stream from an old river							I	D	D
C51.	Defines sediment				I	D	D	M	M	M
C52.	Describes parts of a river (i.e. source, meander, load, bed, mouth, etc.)					I	D	D	D	D
C53.	Describes how running water forms deltas, alluvial fans, oxbows, and waterfalls				I	D	D	D	D	D
C54.	Defines a watershed							I	D	D
C55.	Describes ways in which running water restructures land forms				I	D	D	D	D	D
C56.	Describes how caves are formed						I	D	D	D
C57.	Compare and contrasts stalagmites and stalactites						I	D	D	D
C58.	Defines water table						I	D	D	D
C59.	Describes how glaciers are formed					I	D	D	D	D
C60.	Describes how glaciers change landforms over time and the effects of these changes					I	D	D	D	D
C61.	Identifies land features formed by glacial action (i.e. rills, moraines, cirques, etc.)					I	D	D	D	D
C62.	Describes how icebergs are formed						I	D	D	D
C63.	Identifies the various geologic eras						I	D	D	D
C64.	Describes the main characteristics of the various geological eras						I	D	D	D
C65.	Describes the development of life on earth during specific time periods						I	D	D	D

SUBJECT OBJECTIVES:		GRADE LEVEL								
		K	1	2	3	4	5	6	7*	8*
C66.	Describes how fossils were formed			I	D	D	D	M	M	M
C67.	Describes methods by which fossils can be used to date geologic events							I	D	D
C68.	Describes methods used to extract fossils from rocks							I	D	D
C69.	Identifies current dating methods for geologic events (i.e. carbon-14, etc.)							I	D	D
C70.	Identifies the main tools used by geologists							I	D	D
C71.	Describes why some natural hazards are predictable and other are not						I	D	D	D
C72.	Describes how living things effect the physical characteristics of their region					I	D	D	D	D
D.	OCEANOGRAPHY									
D1.	Defines oceanography						I	D	M	M
D2.	Lists the historic and current contributions of oceanographers and institutions to the field of oceanographic research							I	D	D
D3.	Identifies topographical features on the ocean floor that are similar to those on land						I	D	D	D
D4.	Describes the main characteristics of major structures of ocean basins (i.e. rises, abyssal plains, trenches, etc.)							I	D	D
D5.	Describes the relationships between currents, sediments, and structures of ocean basins						I	D	D	D
D6.	Describes the main topographic features of continental margins (i.e. shore, continental shelf, continental slope, submarine canyons, etc.)							I	D	D
D7.	Describes the common characteristics which distinguish seawater from fresh water		I	D	D	D	D	D	D	D
D8.	Identifies the major layers of ocean water (i.e. bottom water, deep water, etc.)						I	D	D	D
D9.	Describes the effects of the ocean currents on the climate and topography of adjacent land masses							I	D	D
D10.	Describes the influence that oceans have on the temperature and climate of the earth						I	D	D	D
D11.	Identifies the forces which are responsible for tides and the changes they cause on the earth				I	D	D	D	D	D

SUBJECT OBJECTIVES:		GRADE LEVEL								
		K	1	2	3	4	5	6	7*	8*
D12.	Describes how tides may be used to generate electricity						I	D	D	D
D13.	Identifies the main causes of ocean waves					I	D	D	D	D
D14.	Describes the factors which affect wave height and speed						I	D	D	D
D15.	Identifies the characteristics and possible results of a Tsunami					I	D	D	D	D
D16.	Identifies the structural characteristics of islands, reefs, deltas, swamps, estuaries, and tide flats					I	D	D	D	D
D17.	Identifies shoreline forms caused by erosion (i.e. cliffs, etc.) and depositions (i.e. bays, lagoons, etc.)						I	D	D	D
D18.	Lists and describes the main characteristics of the four types of estuaries							I	D	D
D19.	Describes the importance of estuaries to marine and shore life							I	D	D
D20.	Compares and contrasts bays and lagoons							I	D	D
D21.	Identifies ways in which humans have affected the oceans (i.e. fishing, off-shore drilling, dredging, building jetties, etc.)			I	D	D	D	D	D	D
D22.	Identifies various types of ocean pollution (i.e. oil spills, etc.)		I	D	D	D	D	D	D	D
D23.	Describes the effect of pollution on marine life		I	D	D	D	D	D	D	D
D24.	Identifies products that come from the ocean that are useful to humans.					I	D	D	D	D
D25.	Compares the amounts of water found in the various bodies of waters or landforms on the earth (lakes, oceans, rivers, glaciers)					I	D	D	D	D

PROGRAM GOAL III: **LIFE SCIENCE**

PROGRAM OBJECTIVES:

Develops an understanding of:

A. The Cell
B. The Organism
C. Populations of Organisms
D. Natural Systems
E. Human Influence on Natural Systems

SKILL LEVELS:

I-Introduce
D-Develop
M-Master/Maintain

7*~Life Science
8*~Earth, Space, Physical Science

SUBJECT OBJECTIVES:		GRADE LEVEL								
		K	1	2	3	4	5	6	7*	8*
A.	THE CELL									
A1.	Defines cells as the basic units of living structures				I	D	D	D	M	M
A2.	Distinguishes between unicellular and multicellular organisms				I	D	D	D	M	M
A3.	Recognizes that most multicellular organisms are organized into tissues, organs, and systems				I	D	D	D	M	M
A4.	Identifies the parts of a generalized plant or animal cell				I	D	D	D	M	M
A5.	Knows the parts of a microscope and uses them correctly; how to utilize the microscope					I	D	D	D	D
A6.	Prepares materials for microscopic use							I	D	D
A7.	Recognizes the main parts of a cell from microscopic inspection							I	D	D
A8.	Differentiates between the concepts of structure and function				I	D	D	D	D	D
A9.	Describes the functions of cell parts						I	D	D	M
A10.	Identifies the materials which cells require to maintain life					I	D	D	M	M
A11.	Identifies the processes that are required for living cells to acquire materials necessary to maintain life (i.e. diffusion and osmosis)							I	D	D
A12.	Understands the interdependence of living things and their environment	I	D	D	D	D	D	D	M	M
A13.	Describes the materials needed for photosynthesis and lists its products			I	D	D	D	D	M	M

SUBJECT OBJECTIVES:		GRADE LEVEL								
		K	1	2	3	4	5	6	7*	8*
A14.	Relates photosynthesis to both a respiratory process and a food process				I	D	D	D	M	
A15.	Describes the processes by which animal and plant cells acquire and use energy					I	D	D	D	
A16.	Knows that cells respond to external stimuli							I	D	
A17.	Defines DNA, gene, and trait						I	D	M	
A18.	Knows that the "blueprint" of an organism is passed from cell to cell by duplication of DNA, followed by mitosis						I	D	M	
A19.	Compares and contrasts mitosis and meiosis						I	D	M	
A20.	Identifies and describes the stages of meiosis and mitosis						I	D	D	
A21.	Predicts single trait expression in offspring using Mendel's laws and the Punnett square							I	D	
A22.	Describes mutation							I	D	
A23.	Explains the genetic basis for determination of the sex of an organism							I	D	
A24.	Compares and contrasts asexual and sexual reproduction						I	D	D	
B.	THE ORGANISM									
B1.	Defines organism			I	D	D	D	M	M	
B2.	Lists the characteristic functions that distinguishes living from nonliving matter	I	D	D	D	D	M	M	M	I
B3.	Defines classification and groups organisms on the basis of common characteristics	I	D	D	D	D	D	M	M	I
B4.	Knows that major categories in a taxonomy of organisms are called kingdoms which are subdivided into phyla, classes, orders, families, genera, species, and varieties					I	D	D	D	
B5.	Knows that an organism's scientific name consists of two Latin words which identify its exact place in the taxonomy of organisms					I	D	D	D	
B6.	Knows that structural characteristics of organisms may vary in shape, color, size, composition, location in the organism, etc.	I	D	D	D	D	D	D	M	I
B7.	Identifies the external and internal structures of an organism which enables it to live, move, protect itself and obtain food in its environment	I	D	D	D	D	D	D	M	I
B8.	Uses ocular equipment to examine structures of organisms	I	D	D	D	D	D	D	D	I

SUBJECT OBJECTIVES:		GRADE LEVEL								
		K	1	2	3	4	5	6	7*	8*
B9.	Identifies specific organisms through observation of their structures	I	D	D	D	D	D	D	D	D
B10.	Knows that parts of organisms may have several functions	I	D	D	D	D	D	D	D	D
B11.	Describes various adaptations in which organisms utilize for survival	I	D	D	D	D	D	D	D	D
B12.	Knows that "behavior" refers to the manner in which organisms respond to stimuli		I	D	D	D	D	D	M	M
B13.	Lists ways in which various organisms perceive their environment (i.e. smell, sound, sight, etc.)	I	D	D	D	D	D	D	M	M
B14.	Describes microorganism					I	D	D	M	M
B15.	Identifies the natural habitats of various microorganisms					I	D	D	D	D
B16.	Grows cultures of microorganisms					I	D	D	D	D
B17.	Compares and contrasts viruses, bacteria, and protozoa					I	D	D	D	D
B18.	Compares and contrasts algae, fungi, molds, and lichens					I	D	D	D	D
B19.	Compares and contrasts mosses, liverworts, and ferns					I	D	D	D	D
B20.	Identifies the major parts of a seed and describes their function	I	D	D	D	D	D	D	D	D
B21.	Compares and contrasts gymnosperms and angiosperms						I	D	D	D
B22.	Compares and contrasts monocots and dicots					I	D	D	D	D
B23.	Identifies the parts of common plants (i.e. leaves, roots, stems)	I	D	D	D	M	M	M	M	M
B24.	Defines pollination and knows the ways in which pollen is carried to the stigma for pollination (i.e. wind, insects, etc.)			I	D	D	D	M	M	M
B25.	Grows plants from seeds and observes, measures, and records plant growth	I	D	D	D	D	M	M	M	M
B26.	Tests the effects of moisture, temperature, oxygen, and light on seed germination and growth				I	D	D	D	D	D
B27.	Identifies the parts of a flower and describes their functions	I	D	D	D	D	D	M	M	M
B28.	Identifies the structure and function of the vascular systems in plants				I	D	D	M	M	M
B29.	Classifies seeds, flowers, fruits, or cones by structural similarities and differences	I	D	D	D	D	D	D	D	D

SUBJECT OBJECTIVES:		GRADE LEVEL								
		K	1	2	3	4	5	6	7*	8*
B30.	Describes invertebrates			I	D	D	M	M	M	M
B31.	Identifies the characteristics of sponges and soft-bodied animals (porifera and coelenterata)				I	D	D	D	D	D
B32.	Identifies the characteristics of the types of worms (playhelminthes, nematoda, annelida)				I	D	D	D	D	D
B33.	Identifies the characteristics of mollusks			I	D	D	D	D	D	D
B34.	Identifies the characteristics of echinoderms				I	D	D	D	D	D
B35.	Identifies the characteristics of arthropods	I	D	D	D	D	D	D	D	D
B36.	Identifies the characteristics of the classes of arthropods (i.e. insecta, crustacea, etc.)						I	D	D	D
B37.	Describes the larva, pupa, and adult stages of those organisms which undergo metamorphosis	I	D	D	D	D	D	M	M	M
B38.	Describes vertebrates			I	D	D	M	M	M	M
B39.	Distinguishes between invertebrates and vertebrates			I	D	D	M	M	M	M
B40.	Identifies the characteristics of a fish	I	D	D	D	D	D	D	D	D
B41.	Identifies the characteristics of amphibians	I	D	D	D	D	D	D	D	D
B42.	Identifies the characteristics of reptiles	I	D	D	D	D	D	D	D	D
B43.	Identifies the characteristics of birds	I	D	D	D	D	D	D	D	D
B44.	Identifies the characteristics of mammals	I	D	D	D	D	D	D	D	D
B45.	Compares and contrasts instinct with learned behavior				I	D	D	D	D	D
B46.	Describe ways in which animals communicate	I	D	D	D	D	D	D	D	D
B47.	Identifies similarities between parents and offspring	I	D	D	M	M	M	M		
B48.	Identifies ways in which animals take care of their young	I	D	D	D	D	D	D	M	M
B49.	Lists the advantages some animals gain from organized social groups				I	D	D	D	D	D
B50.	Defines sperm, egg, fertilization, zygote, embryo, and fetus							I	D	D
B51.	Recognizes that sexual reproduction involves the union of gametes to produce viable offspring							I	D	D
B52.	Identifies the stages of embryonic development in selected organisms							I	D	D
B53.	Recognizes that organisms have a process of growth and development	I	D	D	D	D	M	M	M	M

SUBJECT OBJECTIVES:		GRADE LEVEL								
		K	1	2	3	4	5	6	7*	8*
B54.	Describes the major structural and functional changes produced by sexual maturation							I	D	D
B55.	Describes the functions of DNA, RNA, chromosomes, and genes in humans							I	D	D
B56.	Defines genetic dominance and recessiveness and identifies common traits in humans which are dominant and recessive							I	D	D
B57.	Analyzes a family tree (pedigree) in terms of several genetic traits							I	D	D
B58.	Recognizes specific structural and functional differences in specialized cells (i.e. nerve, muscle, etc.)							I	D	D
B59.	Describes the main functions of the skeletal system	I	D	D	D	D	D	D	D	D
B60.	Name the parts of a bone								I	D
B61.	Differentiates between bone and cartilage								I	D
B62.	Identifies the various types of joints								I	D
B63.	Differentiates between tendons and ligaments								I	D
B64.	Describes the main function of the muscular system	I	D	D	D	D	D	D	D	D
B65.	Contrasts voluntary, involuntary, and cardiac muscles							I	D	D
B66.	Describes the major parts of the digestive system and knows their functions	I	D	D	D	D	D	D	D	D
B67.	Describes the main functions of the circulatory system	I	D	D	D	D	D	D	D	D
B68.	Names the major parts of the circulatory system including blood			I	D	D	D	D	D	D
B69.	Identifies the parts of the heart.					I	D	D	D	D
B70.	Traces the flow of the blood through the circulatory system								I	D
B71.	Names the major parts of the respiratory system and knows their functions	I	D	D	D	D	D	D	D	D
B72.	Names the major parts of the excretory system and knows their functions					I	D	D	D	D
B73.	Names the major parts of the nervous system and knows their functions					I	D	D	D	D
B74.	Distinguishes between voluntary and involuntary responses					I	D	D	D	D
B75.	Names the major parts of the reproductive systems, both male and female, and knows their functions							I	D	D

SUBJECT OBJECTIVES:		GRADE LEVEL								
		K	1	2	3	4	5	6	7*	8*
B76.	Describes the structure and function of each of the five special sensory organs	I	D	D	D	D	M	M	M	M
B77.	Names the major endocrine glands and knows their function							I	D	D
B78.	Describes the function of lymphatic system							I	D	D
C.	POPULATION OF ORGANISMS									
C1.	Defines population			I	D	D	D	M	M	M
C2.	Identifies the factors which affect population growth			I	D	D	D	D	D	D
C3.	Analyzes effects of uncontrolled population growth			I	D	D	D	D	D	D
C4.	Lists ways in which diseases are spread among plants and animals					I	D	D	D	D
C5.	Identifies and describes why some organism are extinct				I	D	D	D	D	D
D.	NATURAL SYSTEMS									
D1.	Recognizes that a living thing is a product of its heredity and environment		I	D	D	D	D	M	M	M
D2.	Recognizes that environment is the combination of all external factors which affect and influence growth, development, and reproduction of organisms				I	D	D	D	D	D
D3.	Defines terms used conventionally in the study of natural environments (i.e. habitat, climate, location, region, biome, community, etc.)		I	D	D	D	D	M	M	M
D4.	Identifies factors which cause changes in environments				I	D	D	D	D	D
D5.	Identifies ways in which natural environments meet the basic needs of organisms living in them				I	D	D	D	D	D
D6.	Knows how seasonal and weather changes affect living organisms	I	D	D	D	D	M	M	M	M
D7.	Identifies materials used by animals to construct homes in various biomes or habitats	I	D	D	D	D	M	M	M	M
D8.	Defines terms used to describe relationships within a community (i.e. symbiotic, parasitic, competitive, predatory, etc.)					I	D	D	D	D

SUBJECT OBJECTIVES:		GRADE LEVEL								
		K	1	2	3	4	5	6	7*	8*
D9.	Describes the relationship between producers and consumers in a community			I	D	D	D	D	D	D
D10.	Defines ecology					I	D	D	M	M
D11.	Defines ecosystem, and explains terms used to describe and analyze ecosystems (i.e. stability, diversity, density, cycles, etc.)					I	D	D	D	D
D12.	Describes food chain and food webs and represents both with diagrams		I	D	D	D	D	M	M	M
D13.	Identifies the implications of disruptions in food chains or food webs		I	D	D	D	D	D	M	M
D14.	Defines decay as the breakdown of organic material due to digestive action of micro-organisms					I	D	D	M	M
D15.	Explains the basic cycles of matter operating in successful ecosystems (i.e. water, nitrogen, oxygen-carbon dioxide, etc.)			I	D	D	D	M	M	M
D16.	Applies the principle of conservation of matter to an ecosystem			I	D	D	D	D	D	D
D17.	Describes the major earth biomes (i.e. desert, arctic, freshwater, marine, etc.)			I	D	D	D	D	D	D
D18.	Describes the biosphere					I	D	D	D	D
D19.	Lists the predominant theories concerning the origin of life								I	D
D20.	Identifies the factors of evolutionary process which produce changes in a species								I	D
D21.	Identifies various prehistoric organisms such as dinosaurs, brachiopods, trilobites	I	D	D	D	D	D	D	D	D
D22.	Defines and describes the theory of evolution by natural selection								I	D
E.	HUMAN INFLUENCE ON NATURAL SYSTEMS									
E1.	Identifies substances which humans consider "air pollutants"	I	D	D	D	D	D	D	D	D
E2.	Identifies the factors affecting local and global patterns of dispersal of substances released into the atmosphere	I	D	D	D	D	D	D	D	D
E3.	Defines conservation	I	D	D	D	M	M	M	M	M
E4.	Defines recycling (reduce, reuse, and recycle)	I	D	D	D	M	M	M	M	M
E5.	Identifies the causes and effects related to air pollution and prevention methods		I	D	D	D	D	D	D	D

SUBJECT OBJECTIVES:		GRADE LEVEL								
		K	1	2	3	4	5	6	7*	8*
E6.	Identifies solutions for the negative impact of human activity on the environment				I	D	D	D	D	D
E7.	Describes the ways in which irrigation systems affect land use				I	D	D	D	D	D
E8.	Identifies ways in which human alterations of land affect the stability of the ecosystem (i.e. cutting and laying roads, logging mountainsides, etc.)				I	D	D	D	D	D
E9.	Identifies human activities which modify bodies of water (i.e. dam building, waste, disposal, dredging, etc.)				I	D	D	D	D	D
E10.	Identifies human activities which affect ground water, water tables, or drainage systems, etc.				I	D	D	D	D	D
E11.	Identifies problems and issues related to water pollution, water conservation, or allocation of water resources	I	D	D	D	D	D	D	D	D
E12.	Identifies some species which are in danger of extinction, and human activities which may have contributed to this condition	I	D	D	D	D	D	D	D	D
E13.	Distinguishes between renewable and non-renewable resources				I	D	D	D	D	D
E14.	Defines and identifies biodegradable materials					I	D	D	D	D
E15.	Identifies problems related to the ecological effects of human resource consumption and waste disposal					I	D	D	D	D
E16.	Identifies problems related to use of nuclear energy					I	D	D	D	D
E17.	Identifies recyclable materials	I	D	D	D	D	D	M	M	M

PROGRAM GOAL IV: **PHYSICAL SCIENCE**

PROGRAM OBJECTIVES:

Develops an understanding of the basic principles of:

A. Chemistry
B. Physics

SKILL LEVELS:

I-Introduce
D-Develop
M-Master/Maintain

7*~Life Science
8*~Earth, Space, Physical Science

SUBJECT OBJECTIVES:		GRADE LEVEL								
		K	1	2	3	4	5	6	7*	8*
A.	CHEMISTRY									
A1.	Defines matter		I	D	D	D	M	M	M	M
A2.	Defines and describes physical change				I	D	D	D	D	D
A3.	Defines and describes chemical change				I	D	D	D	D	D
A4.	Defines atom				I	D	D	D	D	M
A5.	Defines proton, electron, and neutron.					I	D	D	D	M
A6.	Defines atomic number					I	D	D	D	M
A7.	Defines atomic mass							I	D	D
A8.	Recognizes that a chemical symbol is one or two letters used to represent a particular element					I	D	D	D	M
A9.	Analyzes and diagrams atomic models, including Lewis Dot and Bohr atomic models									I
A10.	Defines Modern Atomic Theory							I	D	D
A11.	Defines isotopes									I
A12.	Defines ions								I	D
A13.	Defines chemical bond as a force which holds atoms or ions together in a molecule								I	D
A14.	Defines covalent bonding								I	D
A15.	Defines ionic bonding								I	D
A16.	Identifies the elements and the number of atoms of each element represented by the molecular formula of a given molecule								I	D
A17.	Defines elements				I	D	D	D	D	M
A18.	Defines molecules				I	D	D	D	D	M
A19.	Distinguishes between an element and a compound					I	D	D	D	M
A20.	Utilizes the Periodic Table and Periodic Law					I	D	D	D	D
A21.	Distinguishes between periods and families on the periodic table								I	D

SUBJECT OBJECTIVES:		GRADE LEVEL								
		K	1	2	3	4	5	6	7*	8*
A22.	Recognizes that all elements may be classified as metals or non-metals						I	D	D	D
A23.	Describes the differences between metals and non-metals						I	D	D	D
A24.	Identifies the properties of metals and the uses of some important metals						I	D	D	D
A25.	Identifies the properties of non-metals and the relationship of the family members								I	D
A26.	Lists some uses of non-metallic elements						I	D	D	D
A27.	Identifies the properties and uses for the members of the carbon family								I	D
A28.	Knows that matter can be identified by physical and chemical properties				I	D	D	D	D	D
A29.	Recognizes elements by chemical symbol, atomic number, and family								I	D
A30.	Identifies reactants and products in a chemical reaction								I	D
A31.	Balances chemical equations									I
A32.	List the four phases of matter			I	D	D	D	D	D	M
A33.	Recognizes that matter exists as a gas, liquid, or solid, depending on the temperature			I	D	D	D	D	D	M
A34.	Defines the Law of Conservation of Matter and Energy								I	D
A35.	Identifies Einstein's Theory: E = mc2									I
A36.	Recognizes that any change in matter involves energy					I	D	D	D	D
A37.	Identifies properties of gasses			I	D	D	D	D	D	M
A38.	Identifies properties of liquid			I	D	D	D	D	D	M
A39.	Identifies properties of solids			I	D	D	D	D	D	M
A40.	Defines evaporation and condensation			I	D	D	M	M	M	M
A41.	Describes boiling and freezing in terms of the speed of molecules in a liquid					I	D	D	D	D
A42.	Demonstrates surface tension									I
A43.	Defines crystal					I	D	D	D	D
A44.	Identifies the proper conditions for growing crystals					I	D	D	D	D
A45.	Defines solution				I	D	D	D	D	M
A46.	Defines solute and solvent						I	D	D	D
A47.	Describes various types of solutions							I	D	D
A48.	Identifies common materials as mixtures				I	D	D	D	D	D
A49.	Knows that not all materials will dissolve in water				I	D	D	D	D	D

SUBJECT OBJECTIVES:		GRADE LEVEL								
		K	1	2	3	4	5	6	7*	8*
A50.	Knows that not all materials will dissolve in water				I	D	D	D	D	D
A51.	Separates mixtures				I	D	D	D	D	D
A52.	Defines acids and bases								I	D
A53.	Lists the main characteristics of acids and bases								I	D
A54.	Lists various indicators of acids and bases (i.e. litmus paper, etc.)								I	D
A55.	Tests various acids and bases								I	D
A56.	Defines pH								I	D
A57.	Defines neutralization reaction								I	D
A58.	Defines oxidation - reduction									I
A59.	Defines radioactivity									I
A60.	Defines half-life									I
A61.	Distinguishes nuclear fission and nuclear fusion								I	D
A62.	Defines organic chemistry								I	D
B.	PHYSICS									
B1.	Defines mass			I	D	D	D	M	M	M
B2.	Measures the mass of various objects			I	D	D	D	M	M	M
B3.	Defines length	I	D	D	D	M	M	M	M	M
B4.	Measures length	I	D	D	D	M	M	M	M	M
B5.	Identifies the standard units of measurement in both the metric and English units		I	D	D	D	D	D	D	D
B6.	Defines time	I	D	D	D	M	M	M	M	M
B7.	Measures time	I	D	D	D	M	M	M	M	M
B8.	Defines motion		I	D	D	M	M	M	M	M
B9.	Identifies the variables which affect moving objects		I	D	D	D	D	M	M	M
B10.	Defines speed					I	D	D	M	M
B11.	Calculates the average speed of objects					I	D	D	D	M
B13.	Defines circular motion									D
B14.	Defines centripetal force						I	D	D	D
B15.	Defines force		I	D	D	M	M	M	M	M
B16.	Predicts the effects of force upon an object		I	D	D	M	M	M	M	M
B17.	Identifies various types of forces (i.e. frictional, gravitational, electrical, etc.)				I	D	D	D	D	D
B18.	Defines equilibrium					I	D	D	D	D
B19.	Knows that there can be many forces acting on an object				I	D	D	D	D	D
B20.	Define Newton's Three Laws of Motion					I	D	D	D	D

SUBJECT OBJECTIVES:		GRADE LEVEL								
		K	1	2	3	4	5	6	7*	8*
B21.	Demonstrates each of Newton's Three Laws of motion					I	D	D	D	D
B22.	Defines friction			I	D	D	D	D	D	D
B23.	Lists the causes of friction			I	D	D	D	D	D	D
B24.	Describes ways to increase or decrease the frictional forces			I	D	D	D	D	D	D
B25.	Defines Newton's Law of Universal Gravitation									I/D
B26.	Defines gravity		I	D	D	D	D	M	M	M
B27.	Defines weight	I	D	D	D	D	D	M	M	M
B28.	Compares weights of objects by weighing them in his or her hands	I	D	D	D	M	M	M	M	M
B29.	Compares weights of objects by weighing them on a scale	I	D	D	D	M	M	M	M	M
B30.	Defines energy			I	D	D	D	D	D	D
B31.	Identifies the forms of energy				I	D	D	D	D	D
B32.	Describes how energy changes form					I	D	D	D	D
B33.	Identifies common units to measure energy					I	D	D	D	D
B34.	Defines work			I	D	D	D	D	M	M
B35.	Defines kinetic energy					I	D	D	D	D
B36.	Identifies various examples of kinetic energy					I	D	D	D	D
B37.	Defines potential energy					I	D	D	D	D
B38.	Identifies various examples of potential energy					I	D	D	D	D
B39.	Describes the relationship between potential and kinetic energy						I	D	D	D
B40.	Describes simple machine				I	D	D	D	D	D
B41.	Defines compound machine				I	D	D	D	D	D
B42.	Calculates the mechanical advantage of simple machines								I	D
B43.	Identifies the six classes of simple machines				I	D	D	D	D	D
B44.	Identifies the parts of the various simple machines				I	D	D	D	D	D
B45.	Identifies the different classes of levers				I	D	D	D	D	D
B46.	Gives examples of each type of lever				I	D	D	D	D	D
B47.	Compares masses with a balance			I	D	D	D	D	D	D
B48.	Recognizes the relationship between the masses of objects and their distance from the fulcrum				I	D	D	D	D	D
B49.	Defines periodic motion									I
B50.	Defines period as the time interval for a complete oscillation									I

SUBJECT OBJECTIVES:		GRADE LEVEL								
		K	1	2	3	4	5	6	7*	8*
B51.	Defines frequency as the number of complete vibration or oscillations per unit of time									I
B52.	Determines that the period of the swing of a pendulum is dependent on the length of the pendulum									I
B53.	Defines volume			I	D	D	D	D	D	D
B54.	Measure the volume of various objects			I	D	D	D	D	D	D
B55.	Defines density					I	D	D	D	M
B56.	Calculates density							I	D	D
B57.	Compares densities of various liquids			I	D	D	D	D	D	D
B58.	Demonstrates why some objects float and others sink in water	I	D	D	D	D	D	D	M	M
B59.	Defines pressure					I	D	D	D	D
B60.	Describes the effects of height and depth on pressure						I	D	D	D
B61.	Recognizes that most materials expand when heated and contract when cooled.			I	D	D	D	D	D	D
B62.	Defines temperature	I	D	D	D	D	M	M	M	M
B63.	Demonstrates ways to measure temperature	I	D	D	D	D	M	M	M	M
B64.	Defines Fahrenheit, Celsius scales			I	D	D	D	D	D	M
B65.	Identifies the freezing and boiling point of water on Celsius and Fahrenheit scales				I	D	M	M	M	M
B66.	Recognizes the unique expansion and contraction properties of water				I	D	D	D	D	D
B67.	Defines heat			I	D	D	D	M	M	M
B68.	Describes the processes of heat transfer (i.e. conduction, convection, and radiation)					I	D	D	D	D
B69.	Identifies heat conductors and heat insulators					I	D	D	D	D
B70.	Recognizes that dark objects absorb radiant energy and shiny or bright colored objects reflect			I	D	D	D	D	D	D
B71.	Defines longitudinal wave									I
B72.	Defines transverse wave									I
B73.	Identifies common properties of waves, such as frequency, amplitude, or wavelength					I	D	D	D	D
B74.	Defines visible light			I	D	D	D	D	D	D
B75.	Recognizes that an object is visible because of the light reflected from it					I	D	D	M	M

SUBJECT OBJECTIVES:		GRADE LEVEL								
		K	1	2	3	4	5	6	7*	8*
B76.	Describes the causes of different optical effects resulting from light passing through the atmosphere (i.e. blue sky, rainbows, mirages, halos around the moon, etc)							I	D	D
B77.	Defines electromagnetic spectrum					I	D	D	D	D
B78.	Identifies the speed of light						I	D	M	M
B79.	Recognizes the effect of the density of a medium on the speed of light								I	D
B80.	Lists the characteristics of objects which are transparent, translucent and opaque			I	D	D	D	M	M	M
B81.	Recognizes that light has characteristics of both waves and particles									I
B82.	Defines shadow	I	D	D	D	D	D	M	M	M
B83.	Defines mirror	I	I	D	D	D	D	D	M	M
B84.	Distinguishes between convex and concave lenses					I	D	D	D	D
B85.	Identifies the type of image formed by each type of lens					I	D	D	D	D
B86.	Defines spectrum				I	D	D	D	M	M
B87.	Defines prism				I	D	D	D	M	M
B88.	Identifies the frequency determines the color of light					I	D	D	D	D
B89.	Uses a prism to produce colors				I	D	D	D	D	D
B90.	Recognizes that an object is black because it absorbs all frequencies of light				I	D	D	D	D	D
B91.	Recognizes that an object is white because it reflects all frequencies of light				I	D	D	D	D	D
B92.	Identifies primary colors of pigment	I	D	D	M	M	M	M	M	M
B93.	Defines complementary colors of pigment			I	D	D	D	M	M	M
B94.	Defines diffraction of light							I	D	D
B95.	Observes ways in which water distorts images					I	D	D	D	D
B96.	Defines laser					I	D	D	D	D
B97.	Identifies various uses of lasers					I	D	D	D	D
B98.	Defines sound	I	D	D	D	M	M	M	M	M
B99.	Recognizes that sound waves are longitudinal waves					I	D	D	D	D
B100.	Produces sound by causing objects to vibrate	I	I	D	D	M	M	M	M	M
B101.	Identifies the properties of sound perceived by humans			I	D	D	D	D	D	D
B102.	Defines ultrasonic and subsonic							I	D	D
B103.	Compares materials to transmit sound				I	D	D	D	D	D

SUBJECT OBJECTIVES:		GRADE LEVEL								
		K	1	2	3	4	5	6	7*	8*
B104.	Defines a vacuum								I	I
B105.	Recognizes that the speed of sound is related to the properties of the medium through which it passes						I	D	D	D
B106.	Identifies that sound can be reflected and absorbed			I	D	D	D	M	M	M
B107.	Identifies materials which reflect and absorb sound			I	D	D	D	D	D	D
B108.	Defines decibels								I	I
B109.	Distinguishes between loudness and pitch			I	D	D	D	D	D	D
B110.	Defines Doppler Effect						I	D	D	D
B111.	Describes how radar and sonar work						I	D	D	D
B112.	Defines resonance						I	D	D	D
B113.	Demonstrates resonance						I	D	D	D
B114.	Produces sound by vibrating a string	I	D	D	M	M	M	M	M	M
B115.	Changes the pitch by changing the tension on the string	I	D	D	M	M	M	M	M	M
B116.	Defines electricity			I	D	D	D	M	M	M
B117.	Describes ways in which electrical energy is converted to other forms of energy					I	D	D	D	D
B118.	Observes that like charges repel and unlike charges attract			I	D	D	D	D	D	D
B119.	Distinguishes between conductors and insulators					I	D	D	D	D
B120.	Distinguishes static and current electricity					I	D	D	D	D
B121.	Lists examples of static electricity in the environment					I	D	D	D	D
B122.	Identifies the units of electrical measurement					I	D	D	D	D
B123.	Defines grounding							I		D
B124.	Describes how current electricity moves through a conductor					I	D	D	D	D
B125.	Defines resistance					I	D	D	D	D
B126.	Identifies the different processes used to produce electricity					I	D	D	D	D
B127.	Defines electrical circuit					I	D	D	D	D
B128.	Distinguishes between an open and a closed circuit					I	D	D	D	D
B129.	Identifies parallel circuit and series circuit					I	D	D	D	D
B130.	Constructs a series circuit and a parallel circuit					I	D	D	D	D

SUBJECT OBJECTIVES:		GRADE LEVEL								
		K	1	2	3	4	5	6	7*	8*
B131.	Lists the causes of a short circuit.					I	D	D	D	D
B132.	Defines magnetism	I	D	D	D	D	M	M	M	M
B133.	Distinguishes between magnetic and non-magnetic objects	I	D	D	D	D	M	M	M	M
B134.	Identifies natural magnets				I	D	D	D	D	D
B135.	Demonstrates ways to identify permanent and temporary magnets						I	D	D	D
B136.	Observes magnetic poles that will attract or repel other magnets		I	D	D	M	M	M	M	M
B137.	Observes that magnets have magnetic fields around them			I	D	D	D	M	M	M
B138.	Recognizes that there is a magnetic field around an electrical current.					I	D	D	D	D
B139.	Observes that moving a wire through a magnetic field produces an electric current					I	D	D	D	D
B140.	Identifies what causes a magnet to demagnetize						I	D	D	D
B141.	Constructs an electromagnet					I	D	D	D	D
B142.	Defines generator					I	D	D	M	M
B143.	Recognizes the means by which a generator produces alternating current					I	D	D	D	D
B144.	Distinguishes between A.C. and D.C.					I	D	D	D	D
B145.	Identifies the parts of an electric motor							I	D	D
B146.										

PROGRAM GOAL V: **ENGINEERING, TECHNOLOGY, AND THE APPLICATION OF SCIENCE**

PROGRAM OBJECTIVES:

A. Abilities of technological design
B. Understanding technology
C. Abilities to distinguish between natural objects and objects made by humans
D. Engineering Connection

SKILL LEVELS:

I-Introduce
D-Develop
M-Master/Maintain

7*~Life Science
8*~Earth, Space, Physical Science

SUBJECT OBJECTIVES:		GRADE LEVEL								
		K	1	2	3	4	5	6	7*	8*
A.	ABILITIES OF TECHNOLOGICAL DESIGN									
A1.	Explore that each kind of tool has an intended use, which can be helpful or harmful	I	D	D	M	M	M	M	M	M
A2.	Investigate that tools are used to help make things and some things cannot be made without tools		I	D	M	M	M	M	M	M
A3.	Explore that several steps are usually needed to make things	I	I	D	D	M	M	M	M	M
A4.	Investigate that when parts are put together they can do things that they could not do by themselves		I	D	D	D	D	M	M	M
A5.	Communicate orally, pictorially, or in written form the design process used to make something			I	D	D	D	D	D	D
A6.	Use a simple design process to solve a problem				I	D	D	D	D	D
A7.	Describe possible solutions to a design problem				I	D	D	D	D	D
A8.	Describe, illustrate and evaluate the design process used to solve a problem				I	I	D	D	D	D
A9.	Revise an existing design used to solve a problem based on peer review					I	I	D	D	D
A10.	Explain how the solution to one problem may create other problems					I	I	D	D	D
A11.	Design and build a product or create a solution to a problem given one constraint							I	D	D
A12.	Design and build a product or create a solution to a problem given two constraints							I	I	D

SUBJECT OBJECTIVES:		GRADE LEVEL								
		K	1	2	3	4	5	6	7*	8*
A13.	Design and build a product or create a solution to problem given more than two constraints							I	I	D
A14.	Evaluate the overall effectiveness of a product design or solution							I	I	D
B.	UNDERSTANDING TECHNOLOGY									
B1.	Explain that when trying to build something or get something to work better, it helps to follow directions and ask someone who has done it before	I	D	D	D	D	D	D	D	D
B2.	Explore ways people use energy to cook their food and warm their homes		I	D	D	D	D	D	D	D
B3.	Identify how people can save energy by turning things off when they are not using them	I	I	D	D	M	M	M	M	M
B4.	Explain that developing and using technology involves benefits and risks	I	I	D	D	D	D	D	D	D
B5.	Investigate why people make new products or invent new ways to meet their individual wants and needs			I	D	D	D	D	D	D
B6.	Predict how building or trying something new might effect other people and the environment			I	D	D	D	D	D	D
B7.	Describe how technology can extend human abilities				I	D	D	D	D	D
B8.	Describe ways that using technology can have helpful and/or harmful results				I	D	D	D	D	D
B9.	Investigate ways that the results of technology may affect the individual, family and community				I	D	D	D	D	D
B10.	Explain how technology from different areas has improved human lives				I	D	D	D	D	D
B11.	Investigate how technology and inventions change to meet peoples' needs and wants			I	I	D	D	D	D	D
B12.	Investigate positive and negative impacts of human activity and technology on the environment				I	I	D	D	D	D
B13.	Explain how technology influences the quality of life.				I	D	D	D	D	D

SUBJECT OBJECTIVES:		GRADE LEVEL								
		K	1	2	3	4	5	6	7*	8*
B14.	Explain how decisions about the use of products and systems can result in desirable or undesirable consequences							I	D	D
B15.	Describe how automation has changed manufacturing including manual labor being replaced by highly-skilled jobs					I	D	D	D	D
B16.	Explain how the properties of manufactured parts affect the usefulness of an object							I	D	D
B17.	Explain how needs, attitudes and values influence the level of technological development in various cultures							I	D	D
B18.	Describe how decisions to develop and use technologies often put environmental and economic concerns in direct competition with each other							I	D	D
B19.	Recognize that science can only answer some questions and technology can only solve some human problems							I	D	D
B20.	Examine how science and technology have advanced through the contributions of many different people, cultures and times in history							I	D	D
B21.	Examine how choices regarding the use of technology are influenced by constraints caused by various unavoidable factors							I	D	D
C.	ABILITIES TO DISTINGUISH BETWEEN NATURAL OBJECTS AND OBJECTS MADE BY HUMANS									
C1.	Explore the objects that can be sorted as "natural" or "man-made"	I	D	D	M	M	M	M	M	M
C2.	Explore that some materials can be used over and over again	I	D	D	M	M	M	M	M	M
C3.	Explore that some kinds of materials are better suited than others for making something new		I	D	D	M	M	M	M	M
C4.	Identify some materials that can be saved for community recycling projects		I	D	D	M	M	M	M	M

SUBJECT OBJECTIVES:		GRADE LEVEL								
		K	1	2	3	4	5	6	7*	8*
D.	ENGINEERING CONNECTION									
D1.	Infers that engineering has a way of thinking and solving problems that includes: systems thinking; communication, collaboration, optimism; creativity; and ethical considerations	I	D	D	D	D	D	D	D	D
D2.	Uses the engineering design process of "Ask, Imagine, Plan, Create, and Improve"	I	D	D	D	D	D	D	D	D
D3.	Understands how others have used the engineering design process	I	D	D	D	D	D	M	M	M
D4.	Understands that systems can be natural (found in nature) or technological (designed by humans)	I	D	D	D	D	D	M	M	M
D5.	Understands that systems require energy and have parts that work together to accomplish a goal	I	D	D	D	D	D	M	M	M
D6.	Uses a systematic approach to solve several different types of problems	I	D	D	D	D	D	D	D	D
D7.	Uses critical thinking to suggest solutions to problems	I	D	D	D	D	D	D	D	D
D8.	Constructs problem solutions using critical thinking				I	D	D	D	D	D
D9.	Generates multiple solutions to a given problem					I	D	D	D	D
D10.	Applies teamwork and collaboration skills					I	D	D	D	D
D11.	Applies technical communication skills					I	D	D	D	D
D12.	Applies attention to ethical considerations in engineering design and problem solving							I	D	D
D13.	Understands that the engineering design process has multiple steps with no required starting point							I	D	D
D14	Generates a final design from a prototype using iteration							I	D	D
D15	Understands constraints							I	D	D
D16	Distinguishes between different types of models							I	D	D
D17.	Designs and conducts an experiment to gather data required for an engineering design							I	D	D
D18.	Extrapolates through reverse engineering that function of a simple design							I	D	D

SUBJECT OBJECTIVES:		GRADE LEVEL								
		K	1	2	3	4	5	6	7*	8*
D19.	Identifies examples of engineered designs that have mimicked nature (biomimicry)							I	D	D
D20.	Infers the ways in which a specific design can fail							I	D	D
D21.	Hypothesizes how design considerations might be affected by a global viewpoint							I	D	D
D22.	Predicts how human action can affect a system in nature and vice versa							I	D	D
D23.	Understands ethical considerations for an engineering solution based on systems thinking							I	D	D
D24.	Attributes global implications of an engineering problem							I	D	D
D25.	Understands systematic problem solving							I	D	D
D26.	Analyzes a problem where insufficient information requires making an assumption to proceed							I	D	D
D27.	Understands that problems have tradeoffs and constraints to their solution							I	D	D
D28.	Maps out several problems in the local area							I	D	D