

Quarter					Instructional Shifts							
1	2	3	4		<i>Concepts and Skills</i>	Lab inves- tigations	Close Read Strategy	Tier II Vocab	Text Dependent Questions	Evidence Based	Writing Element	Speaking Element
				SR	<b><i>Science Investigation and Reasoning</i></b>							
				SR.A	<b><i>40% of instructional time will be conducting laboratory and field investigations.</i></b>							
				1	Demonstrate safe practices during laboratory and field investigations as outlined in the Texas Safety Standards.							
				2	Practice appropriate use and conservation of resources, including disposal, reuse, or recycling of materials.							
				SR.B	<b><i>Students use scientific inquiry methods during laboratory and field investigations.</i></b>							
				1	Plan and implement comparative and descriptive investigations by making observations, asking well-defined questions, and using appropriate equipment and technology. Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles an potential impacts on people and the natural environment that may limit possible solutions. (MS-ETS1-1)							

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1	2	3	4									
					<p>2</p> <p>Design and implement experimental investigations by making observations asking well-defined questions, formulate testable hypotheses, and select and use appropriate equipment and technology.</p> <p>Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and strains of the problem (MS-ETS1-3).</p>							
					<p>3</p> <p>Collect and record data using the International System of Units and qualitative means such as labeled drawing, writing, and graphic organizers.</p>							
					<p>4</p> <p>Construct tables and graphs, using repeated trials and means to organize data and identify patterns. Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved. (MS-ETS1-4)</p>							

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					5	Analyze data to formulate reasonable explanations, communicate valid conclusions supported by the data, and predict trends. Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success. (MS-ETS1-3)						
					SR.C	<b>Analyze, evaluate, and critique scientific explanation by using empirical evidence, logical reasons, and experimental and observation testing. Includes examining all sides of scientific evidence of those scientific explanations, so as to encourage critical thinking.</b>						
					1	Use model to represent aspects of the natural world such as a human body system and plant and animal cells.						
					2	Identify advantages and limitations of models such as size, scale, properties, and materials.						
					3	Relate the impact of research on scientific thought and society, including the history of science and contributions of scientists as related to the content.						

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					<b>SR.D</b> <i>The students know how to use a variety of tools and methods to conduct science inquiry</i>							
				1	Collect record and analyze information using							
				1a	Life science models							
				1b	Hand lens							
				1c	Stereoscopes							
				1d	Journal/notebooks							
				1e	Microscopes							
				1f	Test tubes							
				1g	Computers							
				1h	Metric tape measure							
				1i	Metric rulers							
				1j	Thermometers							
				1k	Triple beam balance							
				1l	Graduated cylinders							
				1m	Pan Balances							
				1n	Beakers							
				1o	Spring scales							
				1p	Hot plates							
				1q	Meter sticks							
				1r	Calculators							
				1s	Water test kits							
				1t	pH probes							
				1u	Insect traps							
				1v	Globes							
				1w	Digital cameras							
				1x	Microscope slides							
				1y	Timing devices, clocks and stopwatches							
				1z	Other equipment deemed necessary							

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					2	Use preventive safety equipment, including chemical splash goggles, aprons, and gloves, and be prepared to use emergency safety equipment, including an eye/face wash, a fire blanket, and a fire extinguisher.						
					<b>ME</b>	<b><i>Matter and Energy</i></b>						
					<b>ME.A</b>	<b><i>The student knows that interactions occur between matter and energy.</i></b>						
					1	Recognize that radiant energy from the Sun is transformed into chemical energy through the process of photosynthesis.						
					2	Demonstrate and explain the cycling of matter within living systems such as in the decay of biomass in a compost bin.						
					3	Diagram the flow of energy through living systems including food chains, food webs and energy pyramid.						
					<b>ME.B</b>	<b><i>The student knows that matter has physical and chemical properties and can undergo physical and chemical changes.</i></b>						
					1	Identify that organic compounds contain carbon and other elements such as hydrogen, oxygen,, phosphorus, nitrogen, or sulfur						
					2	Distinguish between physical and chemical changes in matter in the digestive system.						

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					3	Recognize how large molecules are broken down into smaller molecules such as carbohydrates can be broken down into sugars.						
					3a*	MS-PS1-3 Develop models to describe the atomic composition of simple molecules and extended structures.						
					3b*	MS-PS1-5 Develop and use a model to describe how the total number of atoms does not change in a chemical reaction and thus mass is conserved.						
					<b>FME</b>	<b><i>Force, Motion and Energy</i></b>						
						<b><i>The student knows that there is a relationship among force, motion, and energy.</i></b>						
					1	Contrast situations where work is done with the different amounts of force to those where no work is done; i.e. moving a box with a ramp, without a ramp or standing still.						
					2	Illustrate the transformation of energy within an organism such as the transfer from chemical energy to heat and thermal energy in digestion.						
					3	Demonstrate and illustrate forces that affect motion in everyday life such as emergence of seedlings, turgor pressure, and geotropism						

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				ES	<i>Earth and Space</i>							
				ES.A	<b><i>The student knows that natural events and human activity can impact Earth systems.</i></b>							
				1	Predict and describe how different types of catastrophic events impact ecosystems such as floods, hurricanes, or tornadoes Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century (MS-ESS3-5)							
				2	Analyze the effects of weathering, erosion, and deposition on the environment in eco regions of TEXAS							
				3	Model the effects of human activity on groundwater and surface water in a watershed. Apply principles to design a method for monitoring and minimizing a human impact on the environment. (MS-ESS3-3) Construct an argument supported by evidence for how increase in human population and per-capita consumption of natural resources impact Earth's systems. (MS-ESS3-4)							
				ES.B	<b><i>The student knows components of our solar system.</i></b>							

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				1	Analyze the characteristic of objects in a solar system that allow life to exist such as the proximity of the Sun, presence of water, and composition of the atmosphere							
				2	Identify the accommodations, considering the characteristics of our solar system, that enabled manned space exploration							
				OE	<b><i>Organisms and Environments</i></b>							
				OE.A	<b><i>The student knows that there is a relationship between organisms and the environment</i></b>							
				1	Observe and describe how different environments, including microhabitats in schoolyards and biomes support different varieties of organisms							
				2	Describe how biodiversity contributes to the sustainability of an ecosystem							
				3	Observe, record and describe the role of ecological succession such as in a microhabitat of a garden with weeds							
				OE.B	<b><i>The student knows that populations and species demonstrate variation and inherit many of their unique traits through gradual processes over many generations.</i></b>							

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					1	Examine organisms or their structures such as insects or leaves and use dichotomous keys for identification.						
					2	Explain variation within a population or species by comparing external features, behaviors, or physiology of organisms that enhance their survival such as migration, hibernation, or storage of food in a bulb.						
					3	Identify some changes in genetic traits that have occurred over several generations through natural selection and selective breeding such as the Galapagos Medium Ground finch or domestic animals. Analyze and interpret data for patterns in the fossil record that document the existence, diversity, extinction, and change of life forms throughout the history of life on Earth under the assumption that natural laws operate today as in the past. (MS-LS4-1) Apply scientific ideas to construct an d explanation for the anatomical similarities and differences among modern organisms and between modern and fossil organisms to infer evolutionary relationships. (MS-LS4-2)						

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					OE.C	<i>The student knows that living systems at all levels of organization demonstrate the complementary nature of structure and function.</i>						
				1	Investigate and explain how internal structures or organisms have adaptations that allow specific functions such as gills in fish, hollow bones in birds, or xylem in plants. Construct and explanation based on evidence that describes how genetic variations of traits in a population increase some individual's probability of surviving and reproducing in a specific environment. (MS-LS4-4) Use mathematical representations to support explanations of how natural selection may							
				2	Identify the main functions of the systems of the human organism including the circulatory, respiratory, skeletal, muscular, digestive, excretory, reproductive, integumentary, nervous, and endocrine systems.							
				3	Recognize levels of organizations in plants and animals, including cells, tissues, organs, organ systems, and organisms							
				4	Differentiate between structure and function in plant and animal cell organelles, including cell membrane, cell wall, nucleus, cytoplasm, mitochondrion, chloroplast, and vacuole .							

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				5	Compare the functions of a cell to the functions of organisms such as waste removal							
				6	Recognize that according to cell theory all organisms are composed of cells and cells carry on similar functions such as extracting energy from foods to sustain life.							
					<b>OE.D</b> <i>The student knows that a living organism must be able to maintain balance and stable internal conditions in response to external and internal stimuli</i>							
				1	Investigate how organisms respond to external stimuli found in the environment such as phototropism and fight or flight							
				2	Describe and relate responses in organisms that may result from internal stimuli such as wilting in plants and fever or vomiting in animals that allow them to maintain balance							
					<b>OE.C</b> <i>The student knows that reproduction is a characteristic of living organisms and that the instructions for traits are governed in the genetic material.</i>							

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					1	Define heredity as the passage of genetic instructions from one generation to the next generation.						
					2	Compare the results of uniform or diverse offspring from sexual reproduction or asexual reproduction.						
					3	Recognize that inherited traits of individuals are governed in the genetic materials found in the genes within chromosomes in the nucleus.						

















































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