

PISD Curriculum – Vertical Alignment of Science TEKS

Middle School Science

Grade 6

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STRAND – SCIENTIFIC INVESTIGATIONS & REASONING

6.1 The student conducts field and laboratory investigations following home and school safety procedures and environmentally appropriate and ethical practices.	7.1 The student conducts field and laboratory investigations following home and school safety procedures and environmentally appropriate and ethical practices.	8.1 The student conducts field and laboratory investigations following home and school safety procedures and environmentally appropriate and ethical practices.
6.1A Demonstrate safe practices during field and laboratory investigations.	7.1A Demonstrate safe practices during field and laboratory investigations.	8.1A Demonstrate safe practices during field and laboratory investigations.
6.1B Make wise choices in the use and conservation of resources and the disposal and recycling of materials.	7.1B Make wise choices in the use and conservation of resources and the disposal and recycling of materials.	8.1B Make wise choices in the use and conservation of resources and the disposal and recycling of materials.
6.2 The student uses scientific methods during fields and laboratory investigations.	6.2 The student uses scientific methods during fields and laboratory investigations.	8.2 The student uses scientific methods during fields and laboratory investigations.
6.2A Plan and implement descriptive and simple experimental investigations, including asking well-defined questions, formulating testable hypotheses, and selecting and using equipment and technology.	7.2A Plan and implement descriptive and simple experimental investigations including asking well-defined questions, formulating testable hypotheses, and selecting and using equipment and technology.	8.2A Plan and implement descriptive and simple experimental investigations including asking well-defined questions, formulating testable hypotheses, and selecting and using equipment and technology.
6.2B Collect information by observing and measuring.	7.2B Collect information by observing and measuring.	8.2B Collect information by observing and measuring.
6.2C Analyze and interpret information to construct reasonable explanations from direct and indirect evidence.	7.2C Analyze and interpret information to construct reasonable explanations from direct and indirect evidence.	8.2C Analyze and interpret information to construct reasonable explanations from direct and indirect evidence.
6.2D Communicate valid conclusions.	7.2D Communicate valid conclusions.	8.2D Communicate valid conclusions.
6.2E Construct simple graphs, tables, maps, and charts using tools including computers to organize, examine and evaluate data.	7.2E Construct simple graphs, tables, maps, and charts using tools including computers to organize, examine and evaluate data.	8.2E Construct simple graphs, tables, maps, and charts using tools including computers to organize, examine and evaluate data.
6.3 The student uses critical thinking and scientific problem solving to make informed decisions.	7.3 The student uses critical thinking and scientific problem solving to make informed decisions.	8.3 The student uses critical thinking and scientific problem solving to make informed decisions.
6.3A Analyze, review, and critique scientific explanations, including hypotheses and theories as to their strengths and weaknesses using scientific evidence and information.	7.3A Analyze, review, and critique scientific explanations, including hypotheses and theories as to their strengths and weaknesses using scientific evidence and information.	8.3A Analyze, review, and critique scientific explanations, including hypotheses and theories, as to their strengths and weaknesses using scientific evidence and information.
6.3B Draw inferences based on information related to promotional materials for products and services.	7.3B Draw inferences based on information related to promotional materials for products and services.	8.3B Draw inferences based on information related to promotional materials for products and services.
6.3C Represent the natural world using models	7.3C Represent the natural world using models	8.3C Represent the natural world using models

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and identify their limitations.	and identify their limitations.	and identify their limitations.
6.3D Evaluate the impact of research on scientific thought, society, and the environment.	7.3D Evaluate the impact of research on scientific thought, society, and the environment.	8.3D Evaluate the impact of research on scientific thought, society, and the environment.
6.3E Connect Grade 6 science concepts with the history of science and contributions of scientists.	7.3E Connect Grade 7 science concepts with the history of science and contributions of scientists.	8.3E Connect Grade 8 science concepts with the history of science and contributions of scientists.
		8.5 The student knows that relationships exist between science and technology.
		8.5A Identify a design problem and propose a solution.
		8.5B Design and test a model to solve a problem.
		8.5C Evaluate the model and make recommendations for improving the model.
6.4 The student knows how to use a variety of tools and methods to conduct science inquiry.	7.4 The student knows how to use a variety of tools and methods to conduct science inquiry.	8.4 The student knows how to use a variety of tools and methods to conduct science inquiry.
6.4A Collect, analyze, and record information using tools including beakers, petri dishes, meter sticks, graduated cylinders, weather instruments, timing devices, hot plates, test tubes, safety goggles, spring scales, magnets, balances, microscopes, telescopes, thermometers, calculators, field equipment, compasses, computers, and computer probes.	7.4A Collect, analyze, and record information using tools including beakers, petri dishes, meter sticks, graduated cylinders, weather instruments, timing devices, hot plates, test tubes, safety goggles, spring scales, magnets, balances, microscopes, telescopes, thermometers, calculators, field equipment, compasses, computers, and computer probes.	8.4A Collect, record, and analyze information using tools including beakers, petri dishes, meter sticks, graduated cylinders, weather instruments, hot plates, dissecting equipment, test tubes, safety goggles, spring scales, balances, microscopes, telescopes, thermometers, calculators, field equipment, computers, computer probes, water test kits, and timing devices.
6.4B Identify patterns in collected information using percent, average, range, and frequency.	7.4B Identify patterns in collected information using percent, average, range, and frequency.	8.4B Extrapolate from collected information to make predictions.

STRAND--SYSTEMS

6.5 The student knows that systems may combine with other systems to form a larger system.	7.5 The student knows that an equilibrium of a system may change.	
6.5A Identify and describe a system that results from the combination of two or more systems.	7.5A Describe how systems may reach equilibrium such as when a volcano erupts.	
6.5B Describe how the properties of a system are different from the properties of its parts.		

STRAND –FORCE, MOTION & ENERGY

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6.6 The student knows that there is a relationship between force and motion.	7.6 The student knows that there is a relationship between force and motion.	8.7 The student knows that there is a relationship between force and motion.
6.6A Identify and describe the changes in position, direction of motion, and speed of an object when acted upon by force.	7.6A Demonstrate basic relationships between force and motion using simple machines including pulleys and levers.	8.7A Demonstrate how unbalanced forces cause changes in the speed or direction of an object's motion.
6.6B Demonstrate that changes in motion can be measured and graphically represented.	7.6B Demonstrate that an object will remain at rest or move at a constant speed and in a straight line if it is not being subjected to an unbalanced force.	
6.6C Identify forces that shape features of the Earth including uplifting, movement of water, and volcanic activity.	7.6C Relate forces to basic processes in living organisms including the flow of blood and the emergence of seedlings.	
		8.7B Recognize that waves are generated and can travel through different media.

STRAND – ORGANISMS & ENVIRONMENTS

6.10 The student knows the relationship between structure and function in living systems.	7.9 The student knows the relationship between structure and function in living systems.	8.6 The student knows that interdependence occurs among living systems.
6.10A Differentiate between structure and function.	7.9A Identify the systems of the human organism and describe their functions.	8.6A Describe interactions among systems in the human organism.
6.10B Determine that all organisms are composed of cells that carry on functions to sustain life.	7.9B Describe how organisms maintain stable internal conditions while living in changing external environments.	8.6B Identify feedback mechanisms that maintain equilibrium of systems such as body temperature, turgor pressure and chemical reactions.
6.10C Identify how structure complements function at different levels of organization, including organs, organ systems, and populations.		
6.11 The student knows that traits of species can change through generations and that the instructions for traits are contained in the genetic material of the organisms.	7.10 The student knows that species can change through generations and that the instructions for traits are contained in the genetic material of the organisms.	8.11 The student knows that traits of species can change through generations and that the instructions for traits are contained in the genetic material of the organisms.
6.11A Identify some changes in traits that can occur over several generations through natural occurrence and selective breeding.	7.10A Identify that sexual reproduction results in more diverse offspring and asexual reproduction results in more uniform offspring.	8.11A Identify that change in environmental conditions can affect the survival of individuals and of species.
6.11B Identify cells as structures containing	7.10B Compare traits of organisms of different	8.11B Distinguish between inherited traits and

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genetic material.	species that enhance their survival and reproduction.	other characteristics that result from interactions with the environment.
6.11C Interpret the role of genes in inheritance.	7.10C Distinguish between dominant and recessive traits and recognize that inherited traits of an individual are contained in genetic material.	8.11C Make predictions about possible outcomes of various genetic combinations of inherited characteristics.
6.12 The student knows that the responses of organisms are caused by internal or external stimuli.	7.11 The student knows that the responses of organisms are caused by internal or external stimuli.	
6.12A Identify responses in organisms to internal stimuli such as hunger or thirst.	7.11A Analyze changes in organisms such as a fever or vomiting that may result from internal stimuli.	
6.12B Identify responses in organisms to external stimuli such as the presence or absence of heat or light.	7.11B Identify responses in organisms to external stimuli found in the environment such as the presence or absence of light.	
6.12C Identify components of an ecosystem to which organisms may respond.		
6.8 The student knows that complex interactions occur between matter and energy.	7.12 The student knows that there is a relationship between organisms and the environment.	8.6 The student knows that interdependence occurs among living systems.
	7.12A Identify components of an ecosystem.	
6.8C Describe energy flow in living systems including food chains and food webs.	7.12B Observe and describe how organisms including producers, consumers, and decomposers live together in an environment and use existing resources.	8.6C Describe interactions within ecosystems.
	7.12C Describe how different environments support different varieties of organisms.	
	7.12D Observe and describe the role of ecological succession in ecosystems.	
	7.5 The student knows that an equilibrium of a system may change.	
	7.5B Observe and describe the role of ecological succession in maintaining equilibrium in an ecosystem.	

STRAND – ENERGY

6.8 The student knows that complex	7.8 The student knows that complex	8.10 The student knows that complex
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interactions occur between matter and energy.	interactions occur between matter and energy.	interactions occur between matter and energy.
6.8A Define matter and energy.	7.8A Illustrate examples of potential and kinetic energy in everyday life.	8.10A Illustrate interactions between matter and energy including specific heat.
6.8B Explain and illustrate the interactions between matter and energy in the water cycle and in the decay of biomass such as in a compost bin.	7.8B Identify that radiant energy from the Sun is transferred into chemical energy through the process of photosynthesis.	8.10B Describe interactions among solar, weather, and ocean systems.
		8.10C Identify and demonstrate that loss or gain of heat energy occurs during exothermic and endothermic chemical reactions.

STRAND – ENERGY AND THE ENVIRONMENT

6.9 The student knows that obtaining, transforming, and distributing energy affects the environment.		
6.9A Identify energy transformations occurring during the production of energy for human use such as electrical energy to heat energy or heat energy to electrical energy.		
6.9B Compare methods used for transforming energy in devices such as water heaters, cooling systems, and hydroelectric and wind power plants		
6.9C Research and describe energy types from their source to their use and determine if the type is renewable, non-renewable, or inexhaustible		

STRAND – MATTER & ENERGY

6.7 The student knows that substances have physical and chemical properties.	7.7 The student knows that substances have physical and chemical properties.	8.9 The student knows that substances have chemical and physical properties.
6.7A Demonstrate that new substances can be made when two or more substances are chemically combined and compare the properties of the new substances to the original substances.	7.7A Identify and demonstrate everyday examples of chemical phenomena such as rusting or tarnishing of metals and burning of wood.	8.9A Demonstrate that substances may react chemically to form new substances.
6.7B Classify substances by their physical and chemical properties.	7.7B Describe physical properties of elements and identify how they are used to position an element on the periodic table.	8.9B Interpret information on the periodic table to understand that physical properties are used to group elements.
	7.7C Recognize that compounds are composed of	8.9C Recognize the importance of formulas and

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	elements.	equations to express what happens in a chemical reaction.
		8.9D Identify that physical and chemical properties influence the development and application of everyday materials such as cooking surfaces, insulation, adhesives, and plastics.
6.8 The student knows that complex interactions occur between matter and energy.		8.8 The student knows that matter is composed of atoms.
6.8A Define matter and energy.		8.8A Describe the structure and parts of an atom.
		8.8B Identify the properties of an atom including mass and electrical charge.

STRAND – EARTH & SPACE

6.13 The student knows components of our solar system.	7.13 The student knows components of our solar system.	8.13 The student knows characteristics of the universe.
6.13A Identify characteristics of objects in our solar system including the Sun, planets, meteorites, comets, asteroids, and moons.	7.13A Identify and illustrate how the tilt of the Earth on its axis as it rotates and revolves around the Sun causes changes in seasons and the length of a day.	8.13A Describe characteristics of the universe such as stars and galaxies.
6.13B Describe types of equipment and transportation needed for space travel.	7.13B Relate the Earth's movement and the moon's orbit to the observed cyclical phases of the moon.	8.13B Explain the use of light years to describe distances in the universe.
		8.13C Research and describe historical scientific theories of the origin of the universe.
6.14 The student knows the structures and functions of Earth systems.	7.14 The student knows that natural events and human activity can alter Earth systems.	8.14 The student knows that natural events and human activities can alter Earth systems.
6.14A Summarize the rock cycle.	7.14A Describe and predict the impact of different catastrophic events on the Earth.	8.14A Predict land features resulting from gradual changes. Such as beach erosion, land subsidence, and mountain building.
6.14B Identify relationships between groundwater and surface water in a watershed.	7.14B Analyze effects of regional erosion deposition and weathering.	8.14B Analyze how natural or human events may have contributed to the extinction of some species.
6.14C Describe components of the atmosphere, including oxygen, nitrogen, and water vapor, and identify the role of atmospheric movement in	7.14C Make inferences and draw conclusions about effects of human activity on Earth's renewable, non-renewable, and inexhaustible	8.14C Describe how human activities have modified soil, water, and air quality.

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weather change.	resources.	
		8.12 The student knows that cycles exist in Earth systems.
		8.12A Analyze and predict the sequence of events in the lunar and rock cycles.
		8.12B Relate the role of oceans to climatic changes.
		8.12C Predict the results of modifying the Earth's nitrogen, water, and carbon cycles.