PLTW Launch Standards Guide

Texas Essential Knowledge and Skills
Science TEKS (K-5)

PLTW Launch Modules have been thoughtfully connected to the TEKS for use by Texas educators. Each grade level contains 3-6 PLTW Launch Modules that are the "best-fit" for the Science TEKS. When grade level suggestions vary from the intended grade level it is shown like this: *Light and Sound (1)* to indicate that the module was originally developed for use in 1st Grade.

Texas educators also have the flexibility to utilize the PLTW Launch Modules in the grade level that works best for their students.

Please note: The information included in this document is subject to change. As with all course materials, we will continue to update as more information becomes available.

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Kindergarten Science TEKS

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Science Standard Connections — **72%**

		Matter: Floating and Sinking (PK)	Structure and Function: Exploring Design	Light and Sound (1)	Sunlight and Weather	Living Things: Needs and Impacts	Animals and Algorithms	Structure and Function: Human Body
Science and engineering practices	S.K.1.A ask questions and define problems based on observations or information from text, phenomena, models, or investigations;	X	X	X	X	X	X	X
	S.K.1.B use scientific practices to plan and conduct simple descriptive investigations and use engineering practices to design solutions to problems;	X	X	X	X	X	X	X
	S.K.1.C identify, describe, and demonstrate safe practices during classroom and field investigations as outlined in Texas Education Agency-approved safety standards;							
	S.K.1.D use tools; (see TEKS for full standard)	X	X	X	X	X	X	X
	S.K.1.E collect observations and measurements as evidence;	X	X	X	X	X	X	X
	S.K.1.F record and organize data using pictures, numbers, words, symbols, and simple graphs; and	X	X	X		X	X	X
	S.K.1.G develop and use models to represent phenomena, objects, and processes or design a prototype for a solution to a problem.	X	X	X	X	X	X	X
	S.K.2.A identify basic advantages and limitations of models such as their size, properties, and materials;	X	X	X	X	X	X	X
	S.K.2.B analyze data by identifying significant features and patterns;	X	X	X	X	X	X	X
	S.K.2.C use mathematical concepts to compare two objects with common attributes; and							
	S.K.2.D evaluate a design or object using criteria to determine if it works as intended.	X	X	X	X	X	X	X
	S.K.3.A develop explanations and propose solutions supported by data and models;	X	X	X	X	X	X	X
	S.K.3.B communicate explanations and solutions individually and collaboratively in a variety of settings and formats; and	X	X	X	X	X	X	X
	S.K.3.C listen actively to others' explanations to identify important evidence and engage respectfully in scientific discussion.	X	X	X	X	X	X	X
	S.K.4.A explain how science or an innovation can help others; and			X				
	S.K.4.B identify scientists and engineers such as Isaac Newton, Mae Jemison, and Ynes Mexia and explore what different scientists and engineers do.	X		X		X		X
Recurring themes and concepts	S.K.5.A identify and use patterns to describe phenomena or design solutions;			X		X		
	S.K.5.B investigate and predict cause-and-effect relationships in science;			X				
	S.K.5.C describe the properties of objects in terms of relative size (scale) and relative quantity;							
	S.K.5.D examine the parts of a whole to define or model a system;							
	S.K.5.E identify forms of energy and properties of matter;	X						
	S.K.5.F describe the relationship between the structure and function of objects, organisms, and systems; and		X					X
	S.K.5.G describe how factors or conditions can cause objects; organisms, and systems to either change or stay the same.					X		

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Kindergarten Science TEKS

Science Standard Connections

72%

		Matter: Floating and Sinking (PK)	Structure and Function: Exploring Design	Light and Sound (1)	Sunlight and Weather	Living Things: Needs and Impacts	Animals and Algorithms	Structure and Function: Human Body
Matter and its properties	S.K.6 The student is expected to identify and record observable physical properties of objects, including shape, color, texture, and material, and generate ways to classify objects.	■	■					
Force, motion, and energy	S.K.7 The student is expected to describe and predict how a magnet interacts with various materials and how magnets can be used to push or pull.							
	S.K.8.A communicate the idea that objects can only be seen when a light source is present and compare the effects of different amounts of light on the appearance of objects; and			■				
	S.K.8.B demonstrate and explain that light travels through some objects and is blocked by other objects, creating shadows.			■				
Earth and space	S.K.9.A identify, describe, and predict the patterns of day and night and their observable characteristics; and							
	S.K.9.B observe, describe, and illustrate the Sun, Moon, stars, and objects in the sky such as clouds.				■			
	S.K.10.A describe and classify rocks by the observable properties of size, shape, color, and texture;							
	S.K.10.B observe and describe weather changes from day to day and over seasons; and				■			
	S.K.10.C identify evidence that supports the idea that air is all around us and demonstrate that wind is moving air using items such as windsock, pinwheel, or ribbon.							
	S.K.11 The student is expected to observe and generate examples of practical uses for rocks, soils, and water.							
Organisms and environments	S.K.12.A observe and identify the dependence of plants on air, sunlight, water, nutrients in the soil, and space to grow; and					■		
	S.K.12.B observe and identify the dependence of animals on air, water, food, space, and shelter.					■	■	
	S.K.13.A identify the structures of plants, including roots, stems, leaves, flowers, and fruits;							
	S.K.13.B identify the different structures that animals have that allow them to interact with their environment such as seeing, hearing, moving, and grasping objects;							
	S.K.13.C identify and record the changes from seed, seedling, plant, flower, and fruit in a simple plant life cycle;							
	S.K.13.D identify ways that young plants resemble the parent plant.							

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1st Grade Science TEKS

Science Standard Connections

55%

		Pushes and Pulls (K)	The Changing Earth (2)	Designs Inspired by Nature	Animated Storytelling
Science and engineering practices	S.1.1.A ask questions and define problems based on observations or information from text, phenomena, models, or investigations;	●	●	●	
	S.1.1.B use scientific practices to plan and conduct simple descriptive investigations and use engineering practices to design solutions to problems	●	●	●	
	S.1.1.C identify, describe, and demonstrate safe practices during classroom and field investigations as outlined in Texas Education Agency-approved safety standards;				
	S.1.1.D use tools; (see TEKS for full standard)	●		●	
	S.1.1.E collect observations and measurements as evidence;	●		●	
	S.1.1.F record and organize data using pictures, numbers, words, symbols, and simple graphs; and	●		●	
	S.1.1.G develop and use models to represent phenomena, objects, and processes or design a prototype for a solution to a problem.	●		●	
	S.1.2.A identify basic advantages and limitations of models such as their size, properties, and materials;	●		●	
	S.1.2.B analyze data by identifying significant features and patterns;	●			
	S.1.2.C use mathematical concepts to compare two objects with common attributes; and				
	S.1.2.D evaluate a design or object using criteria to determine if it works as intended.	●		●	
	S.1.3.A develop explanations and propose solutions supported by data and models;	●		●	
	S.1.3.B communicate explanations and solutions individually and collaboratively in a variety of settings and formats; and	●		●	
	S.1.3.C listen actively to others' explanations to identify important evidence and engage respectfully in scientific discussion.	●		●	
	S.1.4.A explain how science or an innovation can help others; and	●			
	S.1.4.B identify scientists and engineers such as Katherine Johnson, Sally Ride, and Ernest Just and explore what different scientists and engineers do.	●		●	
Recurring themes and concepts	S.1.5.A identify and use patterns to describe phenomena or design solutions;		●		●
	S.1.5.B investigate and predict cause-and-effect relationships in science;	●			
	S.1.5.C describe the properties of objects in terms of relative size (scale) and relative quantity;				
	S.1.5.D examine the parts of a whole to define or model a system;		●		
	S.1.5.E identify forms of energy and properties of matter;				
	S.1.5.F describe the relationship between the structure and function of objects, organisms, and systems; and		●		
	S.1.5.G describe how factors or conditions can cause objects; organisms and systems to either change or stay the same.				

PLTW LAUNCH

1st Grade Science TEKS

Science Standard Connections

55%

		Pushes and Pulls (K)	The Changing Earth (2)	Designs Inspired by Nature	Animated Storytelling
Matter and its properties	S.1.6.A classify objects by observable physical properties, including, shape, color, and texture, and attributes such as larger and smaller and heavier and lighter; and				
	S.1.6.B explain and predict changes in materials caused by heating and cooling; and				
	S.1.6.C demonstrate and explain that a whole object is a system made of organized parts such as a toy that can be taken apart and put back together.				
Force, motion, and energy	S.1.7.A explain how pushes and pulls can start, stop, or change the speed or direction of an object's motion; and	■			
	S.1.7.B plan and conduct a descriptive investigation that predicts how pushes and pulls can start, stop, or change the speed or direction of an object's motion.	■			
	S.1.8.A investigate and describe applications of heat in everyday life such as cooking food or using a clothes dryer; and				
	S.1.8.B describe how some changes caused by heat may be reversed such as melting butter and other changes cannot be reversed such as cooking an egg or baking a cake.				
Earth and space	S.1.9 The student is expected to describe and predict the patterns of seasons of the year such as order of occurrence and changes in nature.				
	S.1.10.A investigate and document the properties of particle size, shape, texture, and color and the components of different types of soils such as topsoil, clay, and sand;				
	S.1.10.B investigate and describe how water can move rock and oil particles from one place to another;		▨		
	S.1.10.C compare the properties of puddles, ponds, streams, rivers, lakes, and oceans, including color, clarity, size, shape, and whether it is freshwater or saltwater;				
	S.1.10.D describe and record observable characteristics of weather, including hot or cold, clear or cloudy, calm or windy, and rainy or icy, and explain the impact of weather on daily choices.				
	S.1.11.A identify and describe how plants, animals, and humans use rocks, soil, and water;		▨		
	S.1.11.B explain why water conservation is important; and				
	S.1.11.C describe ways to conserve water such as turning off the faucet when brushing teeth and protect natural sources of water such as keeping trash out of bodies of water.				
Organisms and environment	S.1.12.A classify living and nonliving things based upon whether they have basic needs and produce young;				
	S.1.12.B describe and record examples of interactions and dependence between living and nonliving components in terrariums or aquariums; and				
	S.1.12.C identify and illustrate how living organisms depend on each other through food chains.				
	S.1.13.A identify the external structures of different animals and compare how those structures help different animals live, move, and meet basic needs for survival;			■	
	S.1.13.B record observations of and describe basic life cycles of animals, including a bird, a mammal, and a fish; and				
	S.1.13.C compare ways that young animals resemble their parents.			■	

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2nd Grade Science TEKS

Science Standard Connections

73%

		Materials Science: Properties of Matter	Materials Science: Form and Function	Light: Observing the Sun, Moon, and Stars (1)	Weather: Factors and Hazards (3)	Living Things: Diversity of Life	Animal Adaptations (1)	Grids and Games
Science and engineering practices	S.2.1.A ask questions and define problems based on observations or information from text, phenomena, models, or investigations;	●	●	●	●	●	●	●
	S.2.1.B use scientific practices to plan and conduct simple descriptive investigations and use engineering practices to design solutions to problems;	●	●	●	●	●	●	●
	S.2.1.C identify, describe, and demonstrate safe practices during classroom and field investigations as outlined in Texas Education Agency-approved safety standards;							
	S.2.1.D use tools; (see TEKS for full standard)	●	●	●	●	●	●	●
	S.2.1.E collect observations and measurements as evidence;	●	●	●	●	●	●	●
	S.2.1.F record and organize data using pictures, numbers, words, symbols, and simple graphs; and	●	●	●	●	●	●	●
	S.2.1.G develop and use models to represent phenomena, objects, and processes or design a prototype for a solution to a problem.	●	●	●	●	●	●	●
	S.2.2.A identify basic advantages and limitations of models such as their size, properties, and materials;	●	●	●	●	●	●	●
	S.2.2.B analyze data by identifying significant features and patterns;	●	●	●	●	●	●	●
	S.2.2.C use mathematical concepts to compare two objects with common attributes; and							●
	S.2.2.D evaluate a design or object using criteria to determine if it works as intended.	●	●	●	●	●	●	●
	S.2.3.A develop explanations and propose solutions supported by data and models;	●	●	●	●	●	●	●
	S.2.3.B communicate explanations and solutions individually and collaboratively in a variety of settings and formats; and	●	●	●	●	●	●	●
	S.2.3.C listen actively to others' explanations to identify important evidence and engage respectfully in scientific discussion.	●	●	●	●	●	●	●
	S.2.4.A explain how science or an innovation can help others; and	●	●			●		●
	S.2.4.B identify scientists and engineers such as Alexander Graham Bell, Marie Daly, Mario Molina, and Jane Goodall and explore what different scientists and engineers do.	●	●		●	●	●	●
Recurring themes and concepts	S.2.5.A identify and use patterns to describe phenomena or design solutions;			●	●	●		●
	S.2.5.B investigate and predict cause-and-effect relationships in science;			●	●			
	S.2.5.C describe the properties of objects in terms of relative size (scale) and relative quantity;			●				
	S.2.5.D examine the parts of a whole to define or model a system;			●				
	S.2.5.E identify forms of energy and properties of matter;	●						
	S.2.5.F describe the relationship between the structure and function of objects, organisms, and systems; and		●				●	
	S.2.5.G describe how factors or conditions can cause objects; organisms, and systems to either change or stay the same.					●		

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2nd Grade Science TEKS

Science Standard Connections

73%

		Materials Science: Properties of Matter	Materials Science: Form and Function	Light: Observing the Sun, Moon, and Stars (1)	Weather: Factors and Hazards (3)	Living Things: Diversity of Life	Animal Adaptations (1)	Grids and Games
Matter and its properties	S.2.6.A classify matter by observable physical properties, including texture, flexibility, and relative temperature, and identify whether a material is a solid or liquid;	■	■					
	S.2.6.B conduct a descriptive investigation to explain how physical properties can be changed through processes such as cutting, folding, sanding, melting, or freezing; and	■						
	S.2.6.C demonstrate that small units such as building blocks can be combined or reassembled to form new objects for different purposes and explain the materials chosen based on their physical properties.	■						
Force, motion, and energy	S.2.7.A explain how objects push on each other and may change shape when they touch or collide; and							
	S.2.7.B plan and conduct a descriptive investigation to demonstrate how the strength of a push and pull changes an object's motion.							
	S.2.8.A demonstrate and explain that sound is made by vibrating matter and that vibrations can be caused by a variety of means, including sound;							
	S.2.8.B explain how different levels of sound are used in everyday life such as a whisper in a classroom or a fire alarm; and							
	S.2.8.C design and build a device using tools and materials that uses sound to solve the problem of communicating over a distance.							
Earth and space	S.2.9.A describe the sun as a star that provides light and heat and explain that the moon reflects the sun's light; and			■				
	S.2.9.B observe objects in the sky using tools such as a telescope and compare how objects in the sky are more visible and can appear different with a tool than with an unaided eye							
	S.2.10.A investigate and describe how wind and water move soil and rock particles across the Earth's surface such as wind blowing sand into dunes on a beach or a river carrying rocks as it flows;							
	S.2.10.B measure, record, and graph weather information, including temperature and precipitation; and				■			
	S.2.10.C investigate different types of severe weather events such as a hurricane, tornado, or flood and explain that some events are more likely than others in a given region.				■			
	S.2.11.A distinguish between natural and man-made resources; and							
	S.2.11.B describe how human impact can be limited by making choices to conserve and properly dispose of materials such as reducing use of, reusing, or recycling paper, plastic, and metal.							
Organisms and environment	S.2.12.A describe how the physical characteristics of environments, including the amount of rainfall, support plants and animals within an ecosystem;					■		
	S.2.12.B create and describe food chains identifying producers and consumers to demonstrate how animals depend on other living things; and					■		
	S.2.12.C explain and demonstrate how some plants depend on other living things, wind, or water for pollination and to move their seeds around.		■					
	S.2.13.A identify the roots, stems, leaves, flowers, fruits, and seeds of plants and compare how those structures help different plants meet their basic needs for survival;		■					
	S.2.13.B record and compare how the structures and behaviors of animals help them find and take in food, water, and air;						■	
	S.2.13.C record and compare how being part of a group helps animals obtain food, defend themselves, and cope with changes; and							
	S.2.13.D investigate and describe some of the unique life cycles of animals where young animals do not resemble their parents, including butterflies and frogs.							

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3rd Grade Science TEKS

Science Standard Connections

62%

	Stability and Motion: Forces and Interactions	Stability and Motion: Science of Flight	Earth: Human Impact and Natural Disasters (4)	Environmental Changes	Life Cycles and Survival	Programming Patterns (3)
Science and engineering practices — S.3.1.A ask questions and define problems based on observations or information from text, phenomena, models, or investigations;	■	■	■		■	■
S.3.1.B use scientific practices to plan and conduct descriptive investigations and use engineering practices to design solutions to problems;	■	■	■		■	■
S.3.1.C demonstrate safe practices and the use of safety equipment during classroom and field investigations as outlined in Texas Education Agency-approved safety standards;						
S.3.1.D use tools; (see TEKS for full standard)	■	■	■		■	
S.3.1.E collect observations and measurements as evidence;	■	■	■		■	
S.3.1.F construct appropriate graphic organizers used to collect data, including tables, bar graphs, line graphs, tree maps, concept maps, Venn diagrams, flow charts or sequence maps, and input-output tables that show cause and effect; and	■	■	■		■	
S.3.1.G develop and use models to represent phenomena, objects, and processes or design a prototype for a solution to a problem.	■	■	■		■	
S.3.2.A identify advantages and limitations of models such as their size, properties, and materials;	■	■	■		■	
S.3.2.B analyze data by identifying significant features and patterns;		■	■		■	
S.3.2.C use mathematical concepts to compare patterns and relationships; and		■	■			
S.3.2.D evaluate a design or object using criteria.	■	■	■		■	
S.3.3.A develop explanations and propose solutions supported by data and models;	■	■	■		■	
S.3.3.B communicate explanations and solutions individually and collaboratively in a variety of settings and formats; and	■	■	■		■	
S.3.3.C listen actively to others' explanations to identify important evidence and engage respectfully in scientific discussion.	■	■	■		■	
S.3.4.A explain how scientific discoveries and innovative solutions to problems impact science and society; and	■	■	■			
S.3.4.B research and explore resources such as museums, libraries, professional organizations, private organizations, private companies, online platforms, and mentors employed in a science, technology, engineering, and mathematics (STEM) field to investigate STEM careers.	■	■			■	
Recurring themes and concepts — S.3.5.A identify and use patterns to describe phenomena or design solutions;			■			
S.3.5.B identify and investigate cause-and-effect relationships to explain scientific phenomena or analyze problems;			■			
S.3.5.C use scale, proportion, and quantity to describe, compare, or model different systems;						
S.3.5.D examine and model the parts of a system and their interdependence in the function of the system;					■	■
S.3.5.E investigate how energy flows and matter cycles through systems and how matter is conserved;						
S.3.5.F explain the relationship between the structure and function of objects, organisms, and systems; and						
S.3.5.G explain how factors or conditions impact stability and change in objects, organisms, and systems.	■	■	■	■		

3rd Grade Science TEKS

PLTW LAUNCH

Science Standard Connections — 62%

Category	Standard	Stability and Motion: Forces and Interactions	Stability and Motion: Science of Flight	Earth: Human Impact and Natural Disasters (4)	Environmental Changes	Life Cycles and Survival	Programming Patterns (3)
Matter and energy	S.3.6.A measure, test, and record physical properties of matter, including temperature, mass, magnetism, and the ability to sink or float in water;	✓					
	S.3.6.B describe and classify samples of matter as solids, liquids, and gases and demonstrate that solids have a destinate shape and that liquids and gases take the shape of their container;						
	S.3.6.C predict, observe, and record changes in the state of matter caused by heating or cooling in a variety of substances such as ice becoming liquid water, condensation forming on the outside of a glass, or liquid water being heated to the point of becoming water vapor (gas); and						
	S.3.6.D demonstrate that materials can be combined based on their physical properties to create or modify objects such as building a tower or adding clay to sand to make a stronger brick and justify the selection of materials based on their physical properties.						
Force, motion, and energy	S.3.7.A demonstrate and describe forces acting on an object in contact or at a distance, including magnetism, gravity, and pushes and pulls; and	✓					
	S.3.7.B plan and conduct a descriptive investigation to demonstrate and explain how position and motion can be changed by pushing and pulling objects such as swings, balls, and wagons.						
	S.3.8.A identify everyday examples of energy, including light, sound, thermal, and mechanical; and						
	S.3.8.B plan and conduct investigations that demonstrate how the speed of an object is related to its mechanical energy.						
Earth and space	S.3.9.A construct models and explain the orbits of the Sun, Earth, and Moon in relation to each other; and						
	S.3.9.B identify the order of the planets in Earth's solar system in relation to the Sun.						
	S.3.10.A compare and describe day-to-day weather in different locations at the same time, including air temperature, wind direction, and precipitation;						
	S.3.10.B investigate and explain how soils such as sand and clay are formed by weathering of rock an by decomposition of plan and animal remains; and						
	S.3.10.C model and describe rapid changes in Earth's surface such as volcanic eruptions, earthquakes, and landslides.			✓			
	S.3.11.A explore and explain how humans use natural resources such as in construction, in agriculture, in transportation, and to make products;			✓			
	S.3.11.B explain why the conservation of natural resources is important; and use of, reusing, or recycling paper, plastic, and metal.			✓			
	S.3.11.C identify ways to conserve natural resources through reducing, reusing, or recycling.			✓			
Organisms and environments	S.3.12.A explain how temperature and precipitation affect animal growth and behavior through migration and hibernation and plant responses through dormancy;						
	S.3.12.B identify and describe the flow of energy in a food chain and predict how changes in a food change such as removal of frogs from a pond or bees from a field affect the ecosystem;						
	S.3.12.C describe how natural changes to the environment such as floods and droughts cause some organisms to thrive and others to perish or move to new locations; and				✓	✓	
	S.3.12.D identify fossils as evidence of past living organisms and environments, including common Texas fossils.				✓		
	S.3.13.A explore and explain how external structures and functions of animals such as the neck of a giraffe or webbed feet on a duck enable them to survive in their environment; and						
	S.3.13.B explore, illustrate, and compare life cycles in organisms such as beetles, crickets, radishes, or lima beans.					✓	

4th Grade Science TEKS

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Science Standard Connections — **63%**

	Earth's Water and Interconnected Systems (5)	Earth: Past, Present, and Future	Organisms: Structure and Function	Variation of Traits (3)	Input/Output: Computer Systems	Input/Output: Human Brain
Science and engineering practices						
S.4.1.A ask questions and define problems based on observations or information from text, phenomena, models, or investigations;	X	X	X	X	X	
S.4.1.B use scientific practices to plan and conduct descriptive investigations and use engineering practices to design solutions to problems;	X	X	X	X	X	
S.4.1.C demonstrate safe practices and the use of safety equipment during classroom and field investigations as outlined in Texas Education Agency-approved safety standards;						
S.4.1.D use tools; (see TEKS for full standard)	X				X	
S.4.1.E collect observations and measurements as evidence;	X				X	
S.4.1.F construct appropriate graphic organizers used to collect data, including tables, bar graphs, line graphs, tree maps, concept maps, Venn diagrams, flow charts or sequence maps, and input-output tables that show cause and effect;	X				X	X
S.4.1.G develop and use models to represent phenomena, objects, and processes or design a prototype for a solution to a problem.	X				X	
S.4.2.A identify basic advantages and limitations of models such as their size, scale, properties, and materials;	X				X	
S.4.2.B analyze data by identifying significant features, patterns, or sources of error;		X		X		
S.4.2.C use mathematical calculations to compare patterns and relationships; and	X					
S.4.2.D evaluate a design or object using criteria.	X				X	
S.4.3.A develop explanations and propose solutions supported by data and models;	X				X	
S.4.3.B communicate explanations and solutions individually and collaboratively in a variety of settings and formats; and	X	X	X	X	X	
S.4.3.C listen actively to others' explanations to identify important evidence and engage respectfully in scientific discussion.	X					
S.4.4.A explain how scientific discoveries and innovative solutions to problems impact science and society; and	X			X	X	
S.4.4.B research and explore resources such as museums, libraries, professional organizations, private organizations, private companies, online platforms, and mentors employed in a science, technology, engineering, and mathematics (STEM) field to investigate STEM careers.		X				
Recurring themes and concepts						
S.4.5.A identify and use patterns to describe phenomena or design solutions;			X			
S.4.5.B identify and investigate cause-and-effect relationships to explain scientific phenomena or analyze problems;						
S.4.5.C use scale, proportion, and quantity to describe, compare, or model different systems;	X					
S.4.5.D examine and model the parts of a system and their interdependence in the function of the system;	X				X	X
S.4.5.E investigate how energy flows and matter cycles through systems and how matter is conserved;						
S.4.5.F explain the relationship between the structure and function of objects, organisms, and systems; and			X			X
S.4.5.G explain how factors or conditions impact stability and change in objects, organisms, and systems.		X				

PLTW LAUNCH

4th Grade Science TEKS

Science Standard Connections

63%

		Earth's Water and Interconnected Systems (5)	Earth: Past, Present, and Future	Organisms: Structure and Function	Variation of Traits (3)	Input/Output: Computer Systems	Input/Output: Human Brain
Matter and energy	S.4.6.A classify and describe matter using observable physical properties, including temperature, mass, magnetism, relative density (the ability to sink or float in water), and physical state (solid, liquid, gas);						
	S.4.6.B investigate and compare a variety of mixtures, including solutions that are composed of liquids in liquids and solids in liquids; and						
	S.4.6.C demonstrate that matter is conserved when mixtures such a soil and water or oil and water are formed.						
Force, motion, and energy	S.4.7 The student is expected to plan and conduct descriptive investigations to explore the patterns of forces such as gravity, friction, or magnetism in contact or at a distance on an object.						
	S.4.8.A investigate and identify the transfer of energy by objects in motion, waves in water, and sound;						
	S.4.8.B identify conductors and insulators of thermal and electrical energy; and						
	S.4.8.C demonstrate and describe how electrical energy travels in a closed path that can produce light and thermal energy.						
Earth and space	S.4.9.A collect and analyze data to identify sequences and predict patterns of change in seasons such as change in temperature and length of daylight; and						
	S.4.9.B collect and analyze data to identify sequences and predict patterns of change in observable appearance of the Moon from Earth.						
	S.4.10.A describe and illustrate the continuous movement of water above and on the surface of Earth through the water cycle and explain the role of the Sun as a major source of energy in this process;	●					
	S.4.10.B model and describe slow changes to Earth's surface caused by weathering, erosion, and deposition from water, wind, and ice; and		●				
	S.4.10.C differentiate between weather and climate.						
	S.4.11.A identify and explain advantages and disadvantages of using Earth's renewable and nonrenewable natural resources such as wind, water, sunlight, plants, animals, coal, oil, and natural gas;	●					
	S.4.11.B explain the critical role of energy resources to modern life and how conservation, disposal, and recycling of natural resources impact the environment; and	●					
	S.4.11.C determine the physical properties of rocks that allow Earth's natural resources to be stored there.						
Organisms and environments	S.4.12.A investigate and explain how most producers can make their own food using sunlight, water, and carbon dioxide through the cycling of matter;						
	S.4.12.B describe the cycling of matter and flow of energy through food webs, including the roles of the Sun, producers, consumers, and decomposers; and						
	S.4.12.C identify and describe past environments based on fossil evidence, including common Texas fossils.		●				
	S.4.13.A explore and explain how structures and functions of plants such as waxy leaves and deep roots enable them to survive in their environment; and				●		
	S.4.13.B differentiate between inherited and acquired physical traits of organisms.						

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5th Grade Science TEKS

Science Standard Connections

76%

		Matter: Properties and Reactions	Energy Exploration (4)	Waves and the Properties of Light (4)	Patterns in the Universe	Ecosystems: Flow of Matter and Energy	Robotics and Automation	Robotics and Automation: Challenge	Infection: Detection	Infection: Modeling and Simulation
Science and engineering practices	S.5.1.A ask questions and define problems based on observations or information from text, phenomena, models, or investigations;	■	■	■	■	■	■	■	■	■
	S.5.1.B use scientific practices to plan and conduct descriptive investigations and use engineering practices to design solutions to problems;	■	■	■	■	■	■	■	■	■
	S.5.1.C demonstrate safe practices and the use of safety equipment during classroom and field investigations as outlined in Texas Education Agency-approved safety standards;									
	S.5.1.D use tools; (see TEKS for full standard)	■	■	■	■	■	■	■	■	■
	S.5.1.E collect observations and measurements as evidence;	■	■	■	■	■	■	■	■	■
	S.5.1.F construct appropriate graphic organizers used to collect data, including tables, bar graphs, line graphs, tree maps, concept maps, Venn diagrams, flow charts or sequence maps, and input-output tables that show cause and effect;	■	■	■	■	■	■	■	■	■
	S.5.1.G develop and use models to represent phenomena, objects, and processes or design a prototype for a solution to a problem.	■	■	■	■	■	■	■	■	■
	S.5.2.A identify basic advantages and limitations of models such as their size, properties, and materials;	■	■	■	■	■	■	■	■	■
	S.5.2.B analyze data by identifying significant features, patterns, or sources of error;	■	■	■	■	■	■	■	■	■
	S.5.2.C use mathematical concepts to compare patterns and relationships; and									
	S.5.2.D evaluate experimental and engineering designs	■	■	■	■	■	■	■	■	■
	S.5.3.A develop explanations and propose solutions supported by data and models;	■	■	■	■	■	■	■	■	■
	S.5.3.B communicate explanations and solutions individually and collaboratively in a variety of settings and formats; and	■	■	■	■	■	■	■	■	■
	S.5.3.C listen actively to others' explanations to identify important evidence and engage respectfully in scientific discussion.	■	■	■	■	■	■	■	■	■
	S.5.4.A explain how science discoveries and innovative solutions to problems impact science and society; and					■				
	S.5.4.B research and explore resources such as museums, libraries, professional organizations, private organizations, private companies, online platforms, and mentors employed in a science, technology, engineering, and mathematics (STEM) field to investigate STEM careers.	■				■				
Recurring themes and concepts	S.5.5.A identify and use patterns to describe phenomena or design solutions;		■		■					
	S.5.5.B identify and investigate cause-and-effect relationships to explain scientific phenomena or analyze problems;		■					■		■
	S.5.5.C use scale, proportion, and quantity to describe, compare, or model different systems;	■		■		■		■		■
	S.5.5.D examine and model the parts of a system and their interdependence in the function of the system;			■		■				
	S.5.5.E investigate how energy flows and matter cycles through systems and how matter is conserved;					■				
	S.5.5.F explain the relationship between the structure and function of objects, organisms, and systems; and								■	
	S.5.5.G explain how factors or conditions impact stability and change in objects, organisms, and systems.							■		

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5th Grade Science TEKS
Science Standard Connections

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Category	Standard	Matter: Properties and Reactions	Energy Exploration (4)	Waves and the Properties of Light (4)	Patterns in the Universe	Ecosystems: Flow of Matter and Energy	Robotics and Automation	Robotics and Automation: Challenge	Infection: Detection	Infection: Modeling and Simulation
Matter and energy	S.5.6.A compare and contrast matter based on measurable, testable, or observable physical properties, including mass, magnetism, relative density (sinking and floating using water as a reference point), physical state (solid, liquid, gas), volume, solubility in water, and the ability to conduct or insulate thermal energy and electric energy;	✓								
	S.5.6.B demonstrate and explain that some mixtures maintain physical properties of their substances such as iron filings and sand and water;	✓								
	S.5.6.C compare the properties of substances before and after they are combined into a solution and demonstrate that matter is conserved in solutions; and	✓								
	S.5.6.D illustrate how matter is made up of particles that are too small to be seen such as air in a balloon.	✓		✓						
Force, motion and energy	S.5.7.A investigate and explain how equal and unequal forces acting on an object cause patterns of motion and transfer of energy; and		✓							
	S.5.7.B design a simple experimental investigation that tests the effect of force on an object in a system such as a car on a ramp or a balloon rocket on a string.		✓							
	S.5.8.A investigate and describe the transformation of energy in systems such as energy in a flashlight batter that changes from chemical energy to electrical energy to light energy;		✓							
	S.5.8.B demonstrate that electrical energy in complete circuits can be transformed into motion, light, sound, or thermal energy and identify the requirements for a functioning electrical circuit; and		✓	✓						
	S.5.8.C demonstrate and explain how light travels in a straight line and can be reflected, refracted, or absorbed.			✓						
Earth and space	S.5.9 The student is expected to demonstrate that Earth rotates on its axis once approximately every 24 hours and explain how that causes the day/night cycle and the appearance of the Sun moving across the sky, resulting in changes in shadow positions and shapes.				✓					
	S.5.10.A explain how the Sun and the ocean interact in the water cycle and affect weather;									
	S.5.10.B model and describe the processes that led to the formation of sedimentary rocks and fossil fuels; and									
	S.5.10.C model and identify how changes to Earth's surface by wind, water, or ice result in the formation of landforms, including deltas, canyons, and sand dunes.									
	S.5.11 The student is expected to design and explain solutions such as conservation, recycling, or proper disposal to minimize environmental impact of the use of natural resources.									
Organisms and environments	S.5.12.A observe and describe how a variety of organisms survive by interacting with biotic and abiotic factors in a healthy ecosystem;								✓	
	S.5.12.B predict how changes in the ecosystem affect the cycling of matter and flow of energy in a food web; and								✓	
	S.5.12.C describe a healthy ecosystem and how human activities can be beneficial or harmful to an ecosystem.								✓	
	S.5.13.A analyze the structures and functions of different species to identify how organisms survive in the same environment; and									
	S.5.13.B explain how instinctual behavioral traits such as turtle hatchlings returning to the sea and learned behavioral traits such as orcas hunting in packs increase chances of survival.									