



# Texas Essential Knowledge and Skills for Science Science4Us Alignment

## Kindergarten Science

<b>(b) Knowledge and Skills</b>	<b>Science4Us Instructional Module(s)</b>
(1) Scientific and engineering practices. The student asks questions, identifies problems, and plans and safely conducts classroom, laboratory, and field investigations to answer questions, explain phenomena, or design solutions using appropriate tools and models. The student is expected to:	Students use these skills through instructional modules. (Example, Investigations)
(A) ask questions and define problems based on observations or information from text, phenomena, models, or investigations;	Students use these skills through instructional modules. (Example, Elaborates and Investigations)
(B) use scientific practices to plan and conduct simple descriptive investigations and use engineering practices to design solutions to problems;	Students use these skills throughout all instructional modules.
(C) identify, describe, and demonstrate safe practices during classroom and field investigations as outlined in Texas Education Agency-approved safety standards;	Incorporated within many modules including: <b>Science Tools (I)</b> <b>Observing Matter (PS)</b> <b>Sound Energy (PS)</b> <b>Plants (LS)</b> <b>Living and NonLiving (LS)</b> <b>Weather (ES)</b> <b>Earth in Space (ES)</b>
(D) use tools, including hand lenses, goggles, trays, cups, bowls, sieves or sifters, notebooks, terrariums, aquariums, samples (rocks, sand, soil, loam, gravel, clay, seeds, and plants), windsock, demonstration thermometer, rain gauge, straws, ribbons, non-standard measuring items, blocks or cubes, tuning fork, various flashlights, small paper cups, items that roll, noise makers, hot plate, opaque objects, transparent objects, foil pie pans, foil muffin cups, wax paper, Sun-Moon-Earth model, and plant life cycle model to observe, measure, test, and compare;	Students use these skills through instructional modules. (Example, Elaborates and Investigations)
(E) collect observations and measurements as evidence;	Students use these skills through instructional modules. (Example, Elaborates and Investigations)
(F) record and organize data using pictures, numbers, words, symbols, and simple graphs; and	Students use these skills through instructional modules. (Example, Elaborates and Investigations)
(G) develop and use models to represent phenomena, objects, and processes or design a prototype for a solution to a problem.	Students use these skills through instructional modules. (Example, Investigations)
(2) Scientific and engineering practices. The student analyzes and interprets data to derive meaning, identify features and patterns, and discover relationships or correlations to develop evidence-based arguments or evaluate designs. The student is expected to:	Students use these skills through instructional modules. (Example, Investigations)
(A) identify basic advantages and limitations of models such as their size, properties, and materials;	Incorporated within many modules including: <b>Science Tools (I)</b>



(B) analyze data by identifying significant features and patterns;	Incorporated within many modules including: <b>Science Tools (I)</b>
(C) use mathematical concepts to compare two objects with common attributes; and	Incorporated within many modules including: <b>Science Tools (I)</b>
(D) evaluate a design or object using criteria to determine if it works as intended	Incorporated within many modules including: <b>Science Tools (I)</b>
(3) Scientific and engineering practices. The student develops evidence-based explanations and communicates findings, conclusions, and proposed solutions. The student is expected to:	
(A) develop explanations and propose solutions supported by data and models;	Students use these skills through instructional modules. (Example, Investigations)
(B) communicate explanations and solutions individually and collaboratively in a variety of settings and formats; and	Students use these skills through instructional modules. (Example, Investigations)
(C) listen actively to others' explanations to identify important evidence and engage respectfully in scientific discussion.	Students use these skills through instructional modules. (Example, Investigations)
(5) Recurring themes and concepts. The student uses recurring themes and concepts to make connections across disciplines. The student is expected to:	
(A) identify and use patterns to describe phenomena or design solutions;	Students use these skills throughout all instructional modules.
(B) investigate and predict cause-and-effect relationships in science;	Students use these skills throughout all instructional modules.
(C) describe the properties of objects in terms of relative size (scale) and relative quantity;	<b>Science Tools (I)</b>
(D) examine the parts of a whole to define or model a system;	<b>Plants (LS)</b> <b>Exploring the Universe (ES)</b>
(E) identify forms of energy and properties of matter;	<b>Light Energy (PS)</b> <b>Sound Energy (PS)</b> <b>Observing Matter (PS)</b>
(F) describe the relationship between the structure and function of objects, organisms, and systems; and	<b>Plants (LS)</b> <b>Food Webs (LS)</b> <b>Exploring the Universe (ES)</b>
(G) describe how factors or conditions can cause objects, organisms, and systems to either change or stay the same.	<b>Habitats (LS)</b> <b>Changes in Matter (PS)</b>



<b>(b) Knowledge and Skills</b>	<b>Science4Us Instructional Module(s)</b>
(6) Matter and its properties. The student knows that objects have physical properties that determine how they are described and classified. 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.	<b>Science Tools (I)</b> <b>Observing Matter (PS)</b> <b>Changes in Matter (PS)</b>
(7) Force, motion, and energy. The student knows that forces cause changes in motion and position in everyday life. 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.	<b>Motion (PS)</b> <b>Magnets (PS)</b>
(8) Force, motion, and energy. The student knows that energy is everywhere and can be observed in everyday life. The student is expected to:	
(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	<b>Light Energy (PS)</b>
(B) demonstrate and explain that light travels through some objects and is blocked by other objects, creating shadows	<b>Light Energy (PS)</b>
(9) Earth and space. The student knows that there are recognizable patterns in the natural world and among objects in the sky. The student is expected to:	
(A) identify, describe, and predict the patterns of day and night and their observable characteristics; and	<b>Earth in Space (ES)</b>
(B) observe, describe, and illustrate the Sun, Moon, stars, and objects in the sky such as clouds.	<b>Exploring the Universe (ES)</b>
(10) Earth and space. The student knows that the natural world includes earth materials and systems that can be observed. The student is expected to:	
(A) describe and classify rocks by the observable properties of size, shape, color, and texture;	<b>Materials (ES)</b>
(B) observe and describe weather changes from day to day and over seasons; and	<b>Weather (ES)</b>

<b>(b) Knowledge and Skills</b>	<b>Science4Us Instructional Module(s)</b>
(11) Earth and space. The student knows that earth materials are important to everyday life. The student is expected to observe and generate examples of practical uses for rocks, soil, and water.	<b>Materials (ES)</b>
(12) Organisms and environments. The student knows that plants and animals depend on the environment to meet their basic needs for survival. The student is expected to:  (A) observe and identify the dependence of plants on air, sunlight, water, nutrients in the soil, and space to grow; and  (B) observe and identify the dependence of animals on air, water, food, space, and shelter.	<b>Plants (LS)</b>  <b>Animals (LS)</b>
(13) Organisms and environments. The student knows that organisms resemble their parents and have structures and undergo processes that help them interact and survive within their environments. The student is expected to:	
(A) identify the structures of plants, including roots, stems, leaves, flowers, and fruits;	<b>Plants (LS)</b>
(B) identify the different structures that animals have that allow them to interact with their environment such as seeing, hearing, moving, and grasping objects;	<b>Animals (LS)</b> <b>Habitats (LS)</b>
(C) identify and record the changes from seed, seedling, plant, flower, and fruit in a simple plant life cycle; and	<b>Living and NonLiving (LS)</b>
(D) identify ways that young plants resemble the parent plant.	<b>Living and NonLiving (LS)</b>



## First Grade

<b>(b) Knowledge and Skills</b>	<b>Science4Us Instructional Module(s)</b>
(1) Scientific and engineering practices. The student asks questions, identifies problems, and plans and safely conducts classroom, laboratory, and field investigations to answer questions, explain phenomena, or design solutions using appropriate tools and models. The student is expected to:	Students use these skills through instructional modules. (Example, Investigations)
(A) ask questions and define problems based on observations or information from text, phenomena, models, or investigations;	Students use these skills through instructional modules. (Example, Investigations)
(B) use scientific practices to plan and conduct simple descriptive investigations and use engineering practices to design solutions to problems	Students use these skills through instructional modules. (Example, Elaborates and Investigations)
(C) identify, describe, and demonstrate safe practices during classroom and field investigations as outlined in Texas Education Agency-approved safety standards;	Students use these skills throughout all instructional modules.
(D) use tools, including hand lenses, goggles, heat-resistant gloves, trays, cups, bowls, beakers, sieves/sifters, tweezers, primary balance, notebooks, terrariums, aquariums, stream tables, soil samples (loam, sand, gravel, rocks, and clay), seeds, plants, windsock, pinwheel, student thermometer, demonstration thermometer, rain gauge, straws, ribbons, non-standard measuring items, flashlights, sandpaper, wax paper, items that are magnetic, non-magnetic items, a variety of magnets, hot plate, aluminum foil, Sun-Moon-Earth model, and plant and animal life cycle models to observe, measure, test, and compare;	Incorporated within many modules including: <b>Science Tools (I)</b> <b>Observing Matter (PS)</b> <b>Sound Energy (PS)</b> <b>Plants (LS)</b> <b>Living and NonLiving (LS)</b> <b>Weather (ES)</b> <b>Earth in Space (ES)</b>
(E) collect observations and measurements as evidence;	Students use these skills through instructional modules. (Example, Elaborates and Investigations)
(F) record and organize data using pictures, numbers, words, symbols, and simple graphs; and	Students use these skills through instructional modules. (Example, Elaborates and Investigations)
(G) develop and use models to represent phenomena, objects, and processes or design a prototype for a solution to a problem	Students use these skills through instructional modules. (Example, Elaborates and Investigations)
(2) Scientific and engineering practices. The student analyzes and interprets data to derive meaning, identify features and patterns, and discover relationships or correlations to develop evidence-based arguments or evaluate designs. The student is expected to:	Students use these skills through instructional modules. (Example, Elaborates and Investigations)
(A) identify basic advantages and limitations of models such as their size, properties, and materials;	Incorporated within many modules including: <b>Science Tools (I)</b>
(B) analyze data by identifying significant features and patterns;	Incorporated within many modules including: <b>Science Tools (I)</b>
(C) use mathematical concepts to compare two objects with common attributes; and	Incorporated within many modules including: <b>Science Tools (I)</b>
(D) evaluate a design or object using criteria to determine if it works as intended.	Incorporated within many modules including: <b>Science Tools (I)</b>



<b>(b) Knowledge and Skills</b>	<b>Science4Us Instructional Module(s)</b>
(3) Scientific and engineering practices. The student develops evidence-based explanations and communicates findings, conclusions, and proposed solutions. The student is expected to:	Students use these skills through instructional modules. (Example, Investigations)
(A) develop explanations and propose solutions supported by data and models;	Students use these skills through instructional modules. (Example, Investigations)
(B) communicate explanations and solutions individually and collaboratively in a variety of settings and formats; and	Students use these skills through instructional modules. (Example, Investigations)
(C) listen actively to others' explanations to identify important evidence and engage respectfully in scientific discussion.	Students use these skills through instructional modules. (Example, Investigations)
(5) Recurring themes and concepts. The student uses recurring themes and concepts to make connections across disciplines. The student is expected to:	Students use these skills throughout all instructional modules.
(A) identify and use patterns to describe phenomena or design solutions;	Students use these skills throughout all instructional modules.
(B) investigate and predict cause-and-effect relationships in science;	<b>Science Tools (I)</b>
(C) describe the properties of objects in terms of relative size (scale) and relative quantity;	<b>Plants (LS)</b>
(D) examine the parts of a whole to define or model a system;	<b>Exploring the Universe (ES)</b>
(E) identify forms of energy and properties of matter;	<b>Light Energy (PS)</b> <b>Sound Energy (PS)</b> <b>Observing Matter (PS)</b>
(F) describe the relationship between structure and function of objects, organisms, and systems; and	<b>Plants (LS)</b> <b>Food Webs (LS)</b> <b>Exploring the Universe (ES)</b>
(G) describe how factors or conditions can cause objects, organisms, and systems to either change or stay the same	<b>Habitats (LS)</b> <b>Changes in Matter (PS)</b>
(6) Matter and its properties. The student knows that objects have physical properties that determine how they are described and classified. The student is expected to:	The student is expected to:
(A) classify objects by observable physical properties, including, shape, color, and texture, and attributes such as larger and smaller and heavier and lighter;	<b>Observing Matter (PS)</b>
(B) explain and predict changes in materials caused by heating and cooling; and	<b>Changes in Matter (PS)</b> <b>States of Matter (PS)</b>
(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.	<b>Observing Matter (PS)</b>
(7) Force, motion, and energy. The student knows that forces cause changes in motion and position in everyday life. The student is expected to:	The student is expected to:
(A) explain how pushes and pulls can start, stop, or change the speed or direction of an object's motion; and	<b>Motion (PS)</b>
(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.	<b>Force (PS)</b>



<b>(b) Knowledge and Skills</b>		<b>Science4Us Instructional Module(s)</b>
(8) Force, motion, and energy. The student knows that energy is everywhere and can be observed in everyday life. The student is expected to:		
(A) investigate and describe applications of heat in everyday life such as cooking food or using a clothes dryer; and		<b>Heat Energy (PS)</b>
(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.		<b>Changes in Matter (PS)</b>
(9) Earth and space. The student knows that the natural world has recognizable patterns. The student is expected to describe and predict the patterns of seasons of the year such as order of occurrence and changes in nature.		<b>Earth in Space (ES)</b>
(10) Earth and space. The student knows that the natural world includes earth materials that can be observed in systems and processes. The student is expected to:		
(A) investigate and document the properties of particle size, shape, texture, and		<b>Materials (ES)</b>
(B) investigate and describe how water can move rock and soil particles from one place to another;		<b>Features (ES)</b>
(C) compare the properties of puddles, ponds, streams, rivers, lakes, and oceans, including color, clarity, size, shape, and whether it is freshwater or saltwater; and		<b>Feature (ES)</b>
(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.		<b>Weather (ES)</b>
(11) Earth and space. The student knows that earth materials and products made from these materials are important to everyday life. The student is expected to:		
(A) identify and describe how plants, animals, and humans use rocks, soil, and water;		<b>Materials (ES)</b>
(B) explain why water conservation is important; and		<b>Eco Awareness (LS)</b>
(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		<b>Eco Awareness (LS)</b>
(12) Organisms and environments. The student knows that the environment is composed of relationships between living organisms and nonliving components. The student is expected to:		
(A) classify living and nonliving things based upon whether they have basic needs and produce young;		<b>Living and NonLiving (LS)</b>
(B) describe and record examples of interactions and dependence between living and nonliving components in terrariums or aquariums; and		<b>Living and NonLiving (LS)</b>
(C) identify and illustrate how living organisms depend on each other through food chains.		<b>Food Webs (LS)</b>
(13) Organisms and environments. The student knows that organisms resemble their parents and have structures and undergo processes that help them interact and survive within their environments.		
(A) identify the external structures of different animals and compare how those structures help different animals live, move, and meet basic needs for survival;		<b>Habitats (LS)</b>



(B) record observations of and describe basic life cycles of animals, including a bird, a mammal, and a fish; and (C) compare ways that young animals resemble their parents.	<b>Animals (LS)</b>
	<b>Animals (LS)</b>

### Second Grade

<b>Science4Us Instructional Module(s)</b>	
<b>(b) Knowledge and Skills</b>	<b>Science4Us Instructional Module(s)</b>
(1) Scientific and engineering practices. The student asks questions, identifies problems, and plans and safely conducts classroom, laboratory, and field investigations to answer questions, explain phenomena, or design solutions using appropriate tools and models. The student is expected to:	
(A) ask questions and define problems based on observations or information from text, phenomena, models, or investigations;	Students use these skills through instructional modules. (Example, Investigations)
(B) use scientific practices to plan and conduct simple descriptive investigations and use engineering practices to design solutions to problems	Students use these skills through instructional modules. (Example, Elaborates and Investigations)
(C) identify, describe, and demonstrate safe practices during classroom and field investigations as outlined in Texas Education Agency-approved safety standards;	Students use these skills throughout all instructional modules.
(D) use tools, including hand lenses, goggles, heat-resistant gloves, trays, cups, bowls, beakers, sieves/sifters, tweezers, primary balance, notebooks, terrariums, aquariums, stream tables, soil samples (loam, sand, gravel, rocks, and clay), seeds, plants, windsock, pinwheel, student thermometer, demonstration thermometer, rain gauge, straws, ribbons, non-standard measuring items, flashlights, sandpaper, wax paper, items that are magnetic, non-magnetic items, a variety of magnets, hot plate, aluminum foil, Sun-Moon-Earth model, and plant and animal life cycle models to observe, measure, test, and compare;	Incorporated within many modules including: <b>Science Tools (I)</b> <b>Observing Matter (PS)</b> <b>Sound Energy (PS)</b> <b>Plants (LS)</b> <b>Living and NonLiving (LS)</b> <b>Weather (ES)</b> <b>Earth in Space (ES)</b>
(E) collect observations and measurements as evidence;	Students use these skills through instructional modules. (Example, Elaborates and Investigations)
(F) record and organize data using pictures, numbers, words, symbols, and simple graphs; and	Students use these skills through instructional modules. (Example, Elaborates and Investigations)
(G) develop and use models to represent phenomena, objects, and processes or design a prototype for a solution to a problem	Students use these skills through instructional modules. (Example, Elaborates and Investigations)
(2) Scientific and engineering practices. The student analyzes and interprets data to derive meaning, identify features and patterns, and discover relationships or correlations to develop evidence-based arguments or evaluate designs. The student is expected to:	
(A) identify basic advantages and limitations of models such as their size, properties, and materials;	Incorporated within many modules including: <b>Science Tools (I)</b>
(B) analyze data by identifying significant features and patterns;	Incorporated within many modules including: <b>Science Tools (I)</b>





(C) use mathematical concepts to compare two objects with common attributes; and (D) evaluate a design or object using criteria to determine if it works as intended.	Incorporated within many modules including: <b>Science Tools (I)</b>
(3) Scientific and engineering practices. The student develops evidence-based explanations and communicates findings, conclusions, and proposed solutions. The student is expected to:	Incorporated within many modules including: <b>Science Tools (I)</b>
(A) develop explanations and propose solutions supported by data and models;	Students use these skills through instructional modules. (Example, Investigations)
(B) communicate explanations and solutions individually and collaboratively in a variety of settings and formats; and	Students use these skills through instructional modules. (Example, Investigations)
(C) listen actively to others' explanations to identify important evidence and engage respectfully in scientific discussion.	Students use these skills through instructional modules. (Example, Investigations)
(5) Recurring themes and concepts. The student uses recurring themes and concepts to make connections across disciplines. The student is expected to:	
(A) identify and use patterns to describe phenomena or design solutions;	Students use these skills throughout all instructional modules.
(B) investigate and predict cause-and-effect relationships in science;	Students use these skills throughout all instructional modules.
(C) measure and describe the properties of objects in terms of size and quantity;	<b>Science Tools (I)</b>
(D) examine the parts of a whole to define or model a system;	<b>Plants (LS)</b> <b>Exploring the Universe (ES)</b>
(E) identify forms of energy and properties of matter;	<b>Light Energy (PS)</b> <b>Sound Energy (PS)</b> <b>Observing Matter (PS)</b>
(F) describe the relationship between structure and function of objects, organisms, and systems; and	<b>Plants (LS)</b> <b>Food Webs (LS)</b> <b>Exploring the Universe (ES)</b>
(G) describe how factors or conditions can cause objects, organisms, and systems to either change or stay the same.	<b>Habitats (LS)</b> <b>Changes in Matter (PS)</b>
(6) Matter and its properties. The student knows that matter has physical properties that determine how it is described, classified, and used. The student is expected to:	
(A) classify matter by observable physical properties, including texture, flexibility, and relative temperature, and identify whether a material is a solid or liquid;	<b>Observing Matter (PS)</b>
(B) conduct a descriptive investigation to explain how physical properties can be changed through processes such as cutting, folding, sanding, melting, or freezing; and	<b>Changes in Matter (PS)</b> <b>States of Matter (PS)</b>



(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.	<b>Observing Matter (PS)</b>
(7) Force, motion, and energy. The student knows that forces cause changes in motion and position in everyday life. The student is expected to:	
(A) explain how objects push on each other and may change shape when they touch or collide; and	<b>Motion (PS)</b>
(B) plan and conduct a descriptive investigation to demonstrate how the strength of a push and pull changes an object's motion.	<b>Force (PS)</b>
(8) Force, motion, and energy. The student knows that energy is everywhere and can be observed in everyday life. The student is expected to:	
(A) demonstrate and explain that sound is made by vibrating matter and that vibrations can be caused by a variety of means, including sound;	<b>Sound Energy (PS)</b>
(B) explain how different levels of sound are used in everyday life such as a whisper in a classroom or a fire alarm; and	<b>Sound Energy (PS)</b>
(C) design and build a device using tools and materials that uses sound to solve the problem of communicating over a distance.	<b>Sound Energy (PS)</b>
(9) Earth and space. The student knows that there are recognizable patterns in the natural world and among objects in the sky. The student is expected to:	
(A) describe the Sun as a star that provides light and heat and explain that the Moon reflects the Sun's light; and	<b>Exploring the Universe (ES)</b>
(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.	<b>Exploring the Universe (ES)</b>
(10) Earth and space. The student knows that the natural world includes earth materials that can be observed in systems and processes. The student is expected to:	
(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;	<b>Features (ES)</b>
(B) measure, record, and graph weather information, including temperature and precipitation; and	<b>Weather (ES)</b>
(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	<b>Weather (ES)</b>
(11) Earth and space. The student knows that earth materials and products made from these materials are important to everyday life. The student is expected to:	

(A) distinguish between natural and manmade resources; and	<b>Materials (ES)</b>
(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.	<b>Eco Awareness (ES)</b>
(12) Organisms and environments. The student knows that living organisms have basic needs that must be met through interactions within their environment. The student is expected to:	
(A) describe how the physical characteristics of environments, including the amount of rainfall, support plants and animals within an ecosystem;	<b>Habitats (LS)</b>
(B) create and describe food chains identifying producers and consumers to demonstrate how animals depend on other living things; and	<b>Food Webs (LS) Animals (LS)</b>
(C) explain and demonstrate how some plants depend on other living things: wind, or water for pollination and to move their seeds around.	<b>Living and NonLiving (LS) Plants (LS)</b>
(13) Organisms and environments. The student knows that organisms have structures and undergo processes that help them interact and survive within their environments. The student is expected to:	
(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;	<b>Plants (LS)</b>
(B) record and compare how the structures and behaviors of animals help them find and take in food, water, and air;	<b>Animals (LS)</b>
(C) record and compare how being part of a group helps animals obtain food, defend themselves, and cope with changes; and	<b>Animals (LS) Habitats (LS)</b>
(D) investigate and describe some of the unique life cycles of animal where young animals do not resemble their parents, including butterflies and frogs.	<b>Living and NonLiving (LS) Animals (LS)</b>