



Introduction

Unique Learning System and News2you maintain alignment with state standards through instructional targets. These targets are the bridge between the general content standards adopted by a state and relevant curriculum content for students with significant disabilities. For students with significant cognitive disabilities, access and participation in the state's adopted content standards are generally addressed through extended standards, which may be reduced in depth and breadth. The n2y Instructional Targets have been developed and are continually updated based on studies of standards across all 50 states. This document is provided as a tool to assist you in evaluating alignment of the n2y Instructional Targets to the Texas Essential Knowledge and Skills for Science (TEKS)* and STAAR Alternate 2 Science Essence Statements*.

*Informational sources: [https://texreg.sos.state.tx.us/public/readtac\\$ext.ViewTAC?tac_view=4&ti=19&pt=2&ch=112](https://texreg.sos.state.tx.us/public/readtac$ext.ViewTAC?tac_view=4&ti=19&pt=2&ch=112)
<https://tea.texas.gov/student-assessment/testing/staar-alternate/staar-alternate-2-resources>

The chart below describes the sections of this alignment document. Each instructional target is addressed in one or more of the unit lessons throughout a three-year cycle. Additionally, differentiated task descriptors are provided to define how students with diverse abilities will have access to essential content of the standards. Lesson plans and materials within Unique and News2you ensure the most rigorous alignment possible.

Domain		Grade Band
Texas Essential Knowledge and Skills for Science (TEKS)		STAAR Alternate 2 Science Essence Statements
The Texas Essential Knowledge and Skills for Science (TEKS) are listed in this section.		The STAAR Alternate 2 Science Essence Statements are listed in this section.
Unique Instructional Targets	n2y Grade Band Units	n2y Supporting Activities
Instructional Targets reflect the essential content of grade level standards.	Unique	Unique
	Unique's units focus on a Science or Social Studies topic each month. All areas of Science are addressed in the three-year cycle.	Unique's supporting tools and guides enhance the unit lessons and provide opportunities to address Science concepts. Pertinent supports include the online library, Science Courses and core activities.
	News2you	News2you
	Weekly activities and lessons, which provide practice for Instructional Targets, are listed in this section.	Supporting activities and lessons, which provide practice for Instructional Targets, are listed in this section.
n2y Differentiated Tasks		
Differentiated task descriptors ensure that students with a wide variety of learning abilities and needs are able to access, participate in, and progress through standards-based activities. Differentiated task descriptors are written in student performance terminology.		
Level 3	Level 2	Level 1
<ul style="list-style-type: none">Students at this level are expected to reach the highest level of independence.	<ul style="list-style-type: none">Students at this level will likely require support in all learning activities.	<ul style="list-style-type: none">Students at this level require maximum support in learning. Increasing participation is the primary goal.



Standards for Earth and Space Science		Grades K–2
Texas Essential Knowledge and Skills for Science (TEKS)		STAAR Alternate 2 Science Essence Statements
Kindergarten		Kindergarten
(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:		The STAAR Alternate 2 Science Essence Statements begin in grade 5.
K.9.A Identify, describe, and predict the patterns of day and night and their observable characteristics.		
K.9.B Observe, describe, and illustrate the Sun, Moon, stars, and objects in the sky such as clouds.		
(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:		
K.10.A Describe and classify rocks by the observable properties of size, shape, color, and texture.		
K.10.B Observe and describe weather changes from day to day and over seasons.		
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 a windsock, pinwheel, or ribbon.		
(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.		
1st Grade		
(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.		
(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:		
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.		
1.10.B Investigate and describe how water can move rock and soil particles from one place to another.		
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.		
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.		
(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:		
1.11.A Identify and describe how plants, animals, and humans use rocks, soil, and water.		
1.11.B Explain why water conservation is important.		
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.		

2nd Grade		
(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:		
2.9.A Describe the Sun as a star that provides light and heat and explain that the Moon reflects the Sun's light.		
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.		
(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:		
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.		
2.10.B Measure, record, and graph weather information, including temperature and precipitation.		
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.		
(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:		
2.11.A Distinguish between natural and manmade resources.		
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.		
n2y Instructional Targets	n2y Elementary Grade Band Units	n2y Supporting Activities
<ul style="list-style-type: none"> ● Observe and describe daily and seasonal changes in the weather. ● Identify properties of air (temperature, wind speed, etc.). ● Identify forms of water in the air (clouds, steam, fog, rain, snow, etc.). ● Observe and describe the Sun, Moon and stars in relation to day and night. ● Recognize the Sun as a source of energy that gives light and heat. ● Determine the speed of an Earth event (earthquake, volcano eruption, rock erosion). ● Identify ways to prevent land erosion (plant trees, dams, etc.). ● Recognize areas of land and water on Earth's surface (ocean, lake, mountain, desert, etc.). ● Observe and identify water and the ways it can change (ice, rain, snow, etc.). 	Unique Tell Me About the Weather (Unit 7) Fast and Slow, the Earth Changes (Unit 19) Look Up in the Sky (Unit 22)	Unique Core Materials: Weather Report n2y Library/Science Books Standards Connection ULS Science and Social Studies Courses

n2y Differentiated Tasks		
Level 3	Level 2	Level 1
<ul style="list-style-type: none"> Students will identify four seasons with associated weather and nature changes. Students will record daily weather conditions to describe patterns and changes. Students will identify various forms of water related to weather conditions (clouds, steam, fog, rain, snow, etc.). Students will explain that the Sun is found in the sky during the day and that the Moon is found in the sky at night. Students will recognize that the Sun provides light and heat. Students will determine if an event happened quickly or slowly (earthquake, volcano eruption, rock erosion, etc.). Students will describe ways to prevent land erosion. Students will describe differences between areas of land and water (a mountain is high, a field is flat, an ocean is big, a pond is small, etc.). Students will describe how water can change forms (ice, rain, snow, etc.). 	<ul style="list-style-type: none"> Students will match pictures of a season with a typical weather condition or activity. Students will identify weather conditions for the day (sunny, cloudy, rainy, snowy, windy, etc.). Students will identify weather conditions that involve forms of water (rain, snow, fog, clouds). Students will identify the Sun and Moon as objects in the sky. Students will recognize that light and heat come from the Sun. Students will identify Earth events (earthquake, rock erosion). Students will identify ways to prevent land erosion. Students will sort pictures representing areas of land or water (ocean, lake, mountain, field, etc.). Students will identify water in various forms (ice, rain, snow, etc.). 	<ul style="list-style-type: none"> Students will select a picture associated with a given season of the year. Students will select a picture representing the weather of the day. Students will identify rain. Students will identify day and night through various activities. Students will identify the Sun. Students will observe Earth events (earthquake, volcano eruption, rock erosion). Students will choose a way to prevent land erosion. Students will identify a picture of water and land in various forms. Students will observe and experience water in various forms (ice, rain, snow, etc.), (ocean, lake, mountain, field, etc.).

Standards for Life Science		Grades K–2
Texas Essential Knowledge and Skills for Science (TEKS)	STAAR Alternate 2 Science Essence Statements	
Kindergarten		
(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:		
K.12.A Observe and identify the dependence of plants on air, sunlight, water, nutrients in the soil, and space to grow.		
K.12.B Observe and identify the dependence of animals on air, water, food, space, and shelter.		
(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:		
K.13.A Identify the structures of plants, including roots, stems, leaves, flowers, and fruits.		
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.		
K.13.C Identify and record the changes from seed, seedling, plant, flower, and fruit in a simple plant life cycle.		
K.13.D Identify ways that young plants resemble the parent plant.		
1st Grade		
(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:		
1.12.A Classify living and nonliving things based upon whether they have basic needs and produce young.		
1.12.B Describe and record examples of interactions and dependence between living and nonliving components in terrariums or aquariums.		
1.12.C Identify and illustrate how living organisms depend on each other through food chains.		
(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:		
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.		
1.14.B Record observations of and describe basic life cycles of animals, including a bird, a mammal, and a fish.		
1.14.C Compare ways that young animals resemble their parents.		
The STAAR Alternate 2 Science Essence Statements begin in grade 5.		

2nd Grade		
(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: 2.12.A Describe how the physical characteristics of environments, including the amount of rainfall, support plants and animals within an ecosystem. 2.12.B Create and describe food chains identifying producers and consumers to demonstrate how animals depend on other living things. 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.		
(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: 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. 2.13.B Record and compare how the structures and behaviors of animals help them find and take in food, water, and air. 2.14.C Record and compare how being part of a group helps animals obtain food, defend themselves, and cope with changes. 2.14.D Investigate and describe some of the unique life cycles of animals where young animals do not resemble their parents, including butterflies and frogs.		
n2y Instructional Targets	n2y Elementary Grade Band Units	n2y Supporting Activities
<ul style="list-style-type: none"> Identify basic needs of plants and animals. Identify traits that help living things survive. Observe in what ways an offspring resembles its parents. Identify animals and their environment. 	Unique I Can Be Healthy (Unit 5) Plants Can Grow (Unit 9) Animals in Their Homes (Unit 11) How Are They Alike? (Unit 29)	Unique n2y Library/Science Books Standards Connection ULS Science and Social Studies Courses
n2y Differentiated Tasks		
Level 3	Level 2	Level 1
<ul style="list-style-type: none"> Students will explain why plants and animals need food, water, air and sunlight to grow. Students will describe the basic function of the parts of an animal or plant and how each helps the animal or plant grow (e.g., roots take in water). Students will describe ways offspring resemble their parents. Students will identify plants and animals that live in different habitats. 	<ul style="list-style-type: none"> Students will identify elements needed for plants and animals to survive and grow (food, water, air etc.). Students will identify parts of an animal: head, eyes, ears, mouth and/or plant: seed, root, stem, leaf, flower and function of each. Students will match like features of offspring and their parents. Students will match plants and animals to corresponding habitats. 	<ul style="list-style-type: none"> Students will identify basic needs (food, water, air etc.). Students will locate and explore the function of parts of the body and/or plant with assistance. Students will match animal babies to parent animals. Students will match plants and animals to habitat.

Standards for Physical Science		Grades K–2
Texas Essential Knowledge and Skills for Science (TEKS)		STAAR Alternate 2 Science Essence Statements
Kindergarten		The STAAR Alternate 2 Science Essence Statements begin in grade 5.
(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.		
(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.		
(8) Force, motion, and energy. The student knows that energy is everywhere and can be observed in everyday life. The student is expected to: 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. K.8.B Demonstrate and explain that light travels through some objects and is blocked by other objects, creating shadows.		
1st Grade		
(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: 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. 1.6.B Explain and predict changes in materials caused by heating and cooling. 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.		
(7) Force, motion, and energy. The student knows that forces cause changes in motion and position in everyday life. The student is expected to: 1.7.A Explain how pushes and pulls can start, stop, or change the speed or direction of an object's motion. 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.		
(8) Force, motion, and energy. The student knows that energy is everywhere and can be observed in everyday life. The student is expected to: 1.8.A Investigate and describe applications of heat in everyday life such as cooking food or using a clothes dryer. 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.		
2nd Grade		
(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: 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. 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. 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.		

(7) Force, motion, and energy. The student knows that forces cause changes in motion and position in everyday life. The student is expected to: 2.7.A Explain how objects push on each other and may change shape when they touch or collide.			
2.7.B Plan and conduct a descriptive investigation to demonstrate how the strength of a push and pull changes an object's motion.			
(8) Force, motion, and energy. The student knows that energy is everywhere and can be observed in everyday life. The student is expected to: 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.			
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.			
2.8.C Design and build a device using tools and materials that uses sound to solve the problem of communicating over a distance.			
n2y Instructional Targets <ul style="list-style-type: none">● Explore the way things move (fast or slow, in a straight line, etc.).● Observe how heat and cold can change some materials (water to ice, ice to water, etc.).● Explore sounds and how they are made.● Identify how changes in light affect the appearance of an object.● Sort and describe objects and materials according to recognizable properties.	n2y Elementary Grade Band Units Unique Move It! (Unit 2) See It, Feel It, Describe It (Unit 15) The Hot, Hot Sun (Unit 17) Exploring Light and Sound (Unit 27)	n2y Supporting Activities Unique n2y Library/Science Books Standards Connection ULS Science and Social Studies Courses	
n2y Differentiated Tasks			
Level 3 <ul style="list-style-type: none">● Students will describe the motion of an object.● Students will explain how objects change when they are heated or cooled.● Students will explain how sound is made and amplified.● Students will explain how light affects the appearance of an object.● Students will describe objects by touch, smell, taste, sound and sight (five senses).	Level 2 <ul style="list-style-type: none">● Students will identify ways objects can move.● Students will identify changes in an object that has been heated or cooled.● Students will identify the source of a sound and how that sound can be amplified.● Students will identify visible changes in objects, due to light.● Students will identify an object after using senses (touch, taste, smell, sound and sight) to investigate.	Level 1 <ul style="list-style-type: none">● Students will identify an object that is moving.● Students will identify objects that are hot and cold.● Students will participate in making and amplifying a sound.● Students will identify light and dark.● Students will use a descriptive word to describe an object that has been observed through the senses (hot, cold, fast, slow, etc.).	

Standards for Scientific Inquiry/Engineering, Technology, and Applications of Science		Grades K–2
Texas Essential Knowledge and Skills for Science (TEKS)		STAAR Alternate 2 Science Essence Statements
Kindergarten		<i>The STAAR Alternate 2 Science Essence Statements begin in grade 5.</i>
(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:		
K.1.A Ask questions and define problems based on observations or information from text, phenomena, models, or investigations.		
K.1.B Use scientific practices to plan and conduct simple descriptive investigations and use engineering practices to design solutions to problems.		
K.1.C Identify, describe, and demonstrate safe practices during classroom and field investigations as outlined in Texas Education Agency-approved safety standards.		
K.1.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.		
K.1.E Collect observations and measurements as evidence.		
K.1.F Record and organize data using pictures, numbers, words, symbols, and simple graphs.		
K.1.G Develop and use models to represent phenomena, objects, and processes or design a prototype for a solution to a problem.		
(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:		
K.2.A Identify basic advantages and limitations of models such as their size, properties, and materials.		
K.2.B Analyze data by identifying significant features and patterns.		
K.2.C Use mathematical concepts to compare two objects with common attributes.		
K.2.D Evaluate a design or object using criteria to determine if it works as intended.		
(3) Scientific and engineering practices. The student develops evidence-based explanations and communicates findings, conclusions, and proposed solutions. The student is expected to:		
K.3.A Develop explanations and propose solutions supported by data and models.		
K.3.B Communicate explanations and solutions individually and collaboratively in a variety of settings and formats.		
K.3.C Listen actively to others' explanations to identify important evidence and engage respectfully in scientific discussion.		
(4) Scientific and engineering practices. The student knows the contributions of scientists and recognizes the importance of scientific research and innovation on society. The student is expected to:		
K.4.A Explain how science or an innovation can help others.		
K.4.B Identify scientists and engineers such as Isaac Newton, Mae Jemison, and Ynes Mexia and explore what different scientists and engineers do.		
(5) Recurring themes and concepts. The student uses recurring themes and concepts to make connections across disciplines. The student is expected to:		
K.5.A Identify and use patterns to describe phenomena or design solutions.		
K.5.B Investigate and predict cause-and-effect relationships in science.		
K.5.C Describe the properties of objects in terms of relative size (scale) and relative quantity.		

K.5.D Examine the parts of a whole to define or model a system.	
K.5.E Identify forms of energy and properties of matter.	
K.5.F Describe the relationship between the structure and function of objects, organisms, and systems.	
K.5.G Describe how factors or conditions can cause objects, organisms, and systems to either change or stay the same.	
1st Grade	
(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:	
1.1.A Ask questions and define problems based on observations or information from text, phenomena, models, or investigations.	
1.1.B Use scientific practices to plan and conduct simple descriptive investigations and use engineering practices to design solutions to problems.	
1.1.C Identify, describe, and demonstrate safe practices during classroom and field investigations as outlined in Texas Education Agency-approved safety standards.	
1.1.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.	
1.1.E Collect observations and measurements as evidence.	
1.1.F Record and organize data using pictures, numbers, words, symbols, and simple graphs.	
1.1.G Develop and use models to represent phenomena, objects, and processes or design a prototype for a solution to a problem.	
(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:	
1.2.A Identify basic advantages and limitations of models such as their size, properties, and materials.	
1.2.B Analyze data by identifying significant features and patterns.	
1.2.C Use mathematical concepts to compare two objects with common attributes.	
1.2.D Evaluate a design or object using criteria to determine if it works as intended.	
(3) Scientific and engineering practices. The student develops evidence-based explanations and communicates findings, conclusions, and proposed solutions. The student is expected to:	
1.3.A Develop explanations and propose solutions supported by data and models.	
1.3.B Communicate explanations and solutions individually and collaboratively in a variety of settings and formats.	
1.3.C Listen actively to others' explanations to identify important evidence and engage respectfully in scientific discussion.	
(4) Scientific and engineering practices. The student knows the contributions of scientists and recognizes the importance of scientific research and innovation for society. The student is expected to:	
1.4.A Explain how science or an innovation can help others.	
1.4.B Identify scientists and engineers such as Katherine Johnson, Sally Ride, and Ernest Just and explore what different scientists and engineers do.	
(5) Recurring themes and concepts. The student uses recurring themes and concepts to make connections across disciplines. The student is expected to:	

1.5.A Identify and use patterns to describe phenomena or design solutions.
1.5.B Investigate and predict cause-and-effect relationships in science.
1.5.C Describe the properties of objects in terms of relative size (scale) and relative quantity.
1.5.D Examine the parts of a whole to define or model a system.
1.5.E Identify forms of energy and properties of matter.
1.5.F Describe the relationship between structure and function of objects, organisms, and systems.
1.5.G Describe how factors or conditions can cause objects, organisms, and systems to either change or stay the same.
2nd Grade
(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:
2.1.A Ask questions and define problems based on observations or information from text, phenomena, models, or investigations.
2.1.B Use scientific practices to plan and conduct simple descriptive investigations and use engineering practices to design solutions to problems.
2.1.C Identify, describe, and demonstrate safe practices during classroom and field investigations as outlined in Texas Education Agency-approved safety standards.
2.1.D Use tools, including hand lenses, goggles, heat-resistant gloves, trays, cups, bowls, beakers, notebooks, stream tables, soil, sand, gravel, flowering plants, student thermometer, demonstration thermometer, rain gauge, flashlights, ramps, balls, spinning tops, drums, tuning forks, sandpaper, wax paper, items that are flexible, non-flexible items, magnets, hot plate, aluminum foil, Sun-Moon-Earth model, and frog and butterfly life cycle models to observe, measure, test, and compare.
2.1.E Collect observations and measurements as evidence.
2.1.F Record and organize data using pictures, numbers, words, symbols, and simple graphs.
2.1.G Develop and use models to represent phenomena, objects, and processes or design a prototype for a solution to a problem.
(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:
2.2.A Identify basic advantages and limitations of models such as their size, properties, and materials.
2.2.B Analyze data by identifying significant features and patterns.
2.2.C Use mathematical concepts to compare two objects with common attributes.
2.2.D Evaluate a design or object using criteria to determine if it works as intended.
(3) Scientific and engineering practices. The student develops evidence-based explanations and communicates findings, conclusions, and proposed solutions. The student is expected to:
2.3.A Develop explanations and propose solutions supported by data and models.
2.3.B Communicate explanations and solutions individually and collaboratively in a variety of settings and formats.
2.3.C Listen actively to others' explanations to identify important evidence and engage respectfully in scientific discussion.
(4) Scientific and engineering practices. The student knows the contributions of scientists and recognizes the importance of scientific research and innovation for society. The student is expected to:
2.4.A Explain how science or an innovation can help others.

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.		
(5) Recurring themes and concepts. The student uses recurring themes and concepts to make connections across disciplines. The student is expected to:		
2.5.A Identify and use patterns to describe phenomena or design solutions.		
2.5.B Investigate and predict cause-and-effect relationships in science.		
2.5.C Measure and describe the properties of objects in terms of size and quantity.		
2.5.D Examine the parts of a whole to define or model a system.		
2.5.E Identify forms of energy and properties of matter.		
2.5.F Describe the relationship between structure and function of objects, organisms, and systems.		
2.5.G Describe how factors or conditions can cause objects, organisms, and systems to either change or stay the same.		
n2y Instructional Targets	n2y Elementary Grade Band Units	n2y Supporting Activities
<ul style="list-style-type: none"> Observe and ask questions about the natural environment. Make simple observations and participate in simple investigations. Use senses to learn about the natural environment. Use simple tools to gather data. Communicate with others about observations and investigations. 	Unique	Unique
	Elementary Science Fair (Unit 22)	n2y Library/Science Books ULS Science and Social Studies Courses
	Unique Monthly Lessons	News2you
	Lesson 28: Science Experiment	Worksheets: Science Experiment
n2y Differentiated Tasks		
Level 3	Level 2	Level 1
<ul style="list-style-type: none"> Students will follow steps of a scientific process related to grades K–2 science topics. 	<ul style="list-style-type: none"> With support, students will follow steps of a scientific process related to grades K–2 science topics. 	<ul style="list-style-type: none"> Students will actively participate in a scientific process related to grades K–2 science topics.

Standards for Earth and Space Science		Grades 3–5
Texas Essential Knowledge and Skills for Science (TEKS)		STAAR Alternate 2 Science Essence Statements
3 rd Grade		3 rd Grade
(9) Earth and space. The student knows there are recognizable objects and patterns in Earth's solar system. The student is expected to: 3.9.A Construct models and explain the orbits of the Sun, Earth, and Moon in relation to each other. 3.9.B Identify the order of the planets in Earth's solar system in relation to the Sun.		Not addressed in the STAAR Alternate 2 Science Essence Statements.
(10) Earth and space. The student knows that there are recognizable processes that change Earth over time. The student is expected to: 3.10.A Compare and describe day-to-day weather in different locations at the same time, including air temperature, wind direction, and precipitation. 3.10.B Investigate and explain how soils such as sand and clay are formed by weathering of rock and by decomposition of plant and animal remains. 3.10.C Model and describe rapid changes in Earth's surface such as volcanic eruptions, earthquakes, and landslides.		
(11) Earth and space. The student understands how natural resources are important and can be managed. The student is expected to: 3.11.A Explore and explain how humans use natural resources such as in construction, in agriculture, in transportation, and to make products. 3.11.B Explain why the conservation of natural resources is important. 3.11.C Identify ways to conserve natural resources through reducing, reusing, or recycling.		(3.7) Earth and space. The student knows that Earth consists of natural resources and its surface is constantly changing. (Supporting Standard) Essence Statement Knows that Earth's surface is constantly changing and consists of useful resources.
4 th Grade		
(9) Earth and space. The student recognizes patterns among the Sun, Earth, and Moon system and their effects. The student is expected to: 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. 4.9.B Collect and analyze data to identify sequences and predict patterns of change in the observable appearance of the Moon from Earth.		(4.8) Earth and space. The student knows that there are recognizable patterns in the natural world and among the Sun, Earth, and Moon system. (Supporting Standard) Essence Statement Recognizes patterns in the natural world and among the Sun, Earth, and Moon system
(10) Earth and space. The student knows that there are processes on Earth that create patterns of change. The student is expected to: 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. 4.10.B Model and describe slow changes to Earth's surface caused by weathering, erosion, and deposition from water, wind, and ice. 4.10.C Differentiate between weather and climate.		
(11) Earth and space. The student understands how natural resources are important and can be managed. The student is expected to: 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. 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. 4.11.C Determine the physical properties of rocks that allow Earth's natural resources to be stored there.		(4.7) Earth and space. The students know that Earth consists of useful resources and its surface is constantly changing. (Supporting Standard) Essence Statement Knows that Earth's surface is constantly changing and consists of useful resources.

5 th Grade		5 th Grade
(9) Earth and space. The student recognizes patterns among the Sun, Earth, and Moon system and their effects. 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.		(5.8) Earth and space. The student knows that there are recognizable patterns in the natural world and among the Sun, Earth, and Moon systems. (Readiness and Supporting Standard) Essence Statement Recognizes patterns in the natural world and among the Sun, Earth, and Moon system
(10) Earth and space. The student knows that there are recognizable patterns and processes on Earth. The student is expected to: 5.10.A Explain how the Sun and the ocean interact in the water cycle and affect weather.		
5.10.B Model and describe the processes that led to the formation of sedimentary rocks and fossil fuels.		
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.		
(11) Earth and space. The student understands how natural resources are important and can be managed. 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.		(5.7) Earth and space. The student knows Earth's surface is constantly changing and consists of useful resources. (Readiness Standard) Essence Statement Knows that Earth's surface is constantly changing and consists of useful resources.
n2y Instructional Targets	n2y Intermediate Grade Band Units	n2y Supporting Activities
<ul style="list-style-type: none">● Recognize weather conditions and temperatures as the result of changes in Earth's cycles.● Identify Earth's renewable energy resources (air, water, Sun) and nonrenewable resources (oil, coal).● Identify ways to conserve (reduce and recycle) Earth's resources.● Identify and explore the relationship between Earth and the Sun.● Identify the Sun as one of many stars in the universe.● Recognize the relationship between day and night by referring to Earth's movement on its axis.● Recognize the relationship between the seasons by referring to Earth's movement around the Sun.● Observe ways that soil can hold water and support plant life.● Identify the effects of weather/erosion on Earth's surface.● Recognize areas of land and water on the Earth's surface (ocean, lake, mountain, desert, etc.).	Unique	Unique
	Our Changing Weather (Unit 7) Making It Last (Unit 19) Here Comes the Sun (Unit 23)	n2y Library/Science Books Core Materials: Weather Report ULS Science and Social Studies Courses Standards Connection

n2y Differentiated Tasks		
Level 3	Level 2	Level 1
<ul style="list-style-type: none"> Students will identify patterns in weather and temperature in relation to the seasons of an area. Students will identify and describe renewable and nonrenewable resources. Students will describe and participate in ways to reduce and recycle Earth's resources. Students will identify the interactions between Earth and the Sun (e.g., Earth rotates on its axis and moves around the Sun). Students will identify properties of the Sun (e.g., closest star to Earth, only star in our solar system, one of many stars in our universe). Students will describe the changes in day and night based on the movement of the Earth. Students will describe the seasons based on the position and movement of the Earth. Students will describe various soil conditions and their effect in holding water and supporting plant life. Students will describe the effects of water, ice or wind erosion on the Earth's surface. Students will describe differences between areas of land and water (A mountain is high, a field is flat, an ocean is big, a pond is small, etc.). 	<ul style="list-style-type: none"> Students will describe weather in terms of temperature and conditions. Students will identify renewable or nonrenewable resources. Students will sort like objects that can be recycled. Students will demonstrate how the Earth moves around the Sun. Students will identify a property of the Sun (e.g., The Sun is a star.). Students will identify that day and night are caused by the movement of Earth. Students will identify that seasons are caused by the position and movement of the Earth. Students will identify soil conditions that are suitable for holding water and supporting plant life. Students will identify conditions/ elements that can cause erosion (water, ice, wind etc.). Students will sort pictures representing areas of land or water (ocean, lake, mountain, field, etc.). 	<ul style="list-style-type: none"> Students will identify weather conditions for the day (sunny, cloudy, rainy, snowy, windy, etc.). Students will identify common renewable or nonrenewable resources. Students will participate in sorting recyclable items. Students will participate in a demonstration of how the Earth moves around the Sun. Students will identify the Sun. Students will identify day or night. Students will identify a season. Students will identify soil and water as things plants need. Students will observe the effects of erosion on the Earth. Students will identify land or water in various forms (island, plain lake, river etc.).

Standards for Life Science		Grades 3–5
Texas Essential Knowledge and Skills for Science (TEKS)		STAAR Alternate 2 Science Essence Statements
3 rd Grade		3 rd Grade
<p>(12) Organisms and environments. The student describes patterns, cycles, systems, and relationships within environments. The student is expected to:</p> <p>3.12.A Explain how temperature and precipitation affect animal growth and behavior through migration and hibernation and plant responses through dormancy.</p> <p>3.12.B Identify and describe the flow of energy in a food chain and predict how changes in a food chain such as removal of frogs from a pond or bees from a field affect the ecosystem.</p> <p>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.</p> <p>3.12.D Identify fossils as evidence of past living organisms and environments, including common Texas fossils.</p>		<p>(3.9) Organisms and environments. The student knows and can describe patterns, cycles, systems, and relationships within the environments. (Supporting Standard) Essence Statement Knows that there are relationships and characteristics within environments that support organisms.</p>
<p>(13) Organisms and environments. The student knows that organisms undergo similar life processes and have structures that function to help them survive within their environments. The student is expected to:</p> <p>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.</p> <p>3.13.B Explore, illustrate, and compare life cycles in organisms such as beetles, crickets, radishes, or lima beans.</p>		
4 th Grade		
<p>(12) Organisms and environments. The student describes patterns, cycles, systems, and relationships within environments. The student is expected to:</p> <p>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.</p> <p>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.</p> <p>4.12.C Identify and describe past environments based on fossil evidence, including common Texas fossils.</p> <p>(13) Organisms and environments. The student knows that organisms undergo similar life processes and have structures that function to help them survive within their environments. The student is expected to:</p> <p>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.</p> <p>4.13.B Differentiate between inherited and acquired physical traits of organisms.</p>		<p>(3.10) Organisms and environments. The student knows that organisms undergo similar life processes and have structures that help them survive within their environments. (Supporting Standard) Essence Statement Knows that organisms undergo similar life processes and have structures and behaviors that help them survive within their environments.</p>
4 th Grade		
		<p><i>Not addressed in the STAAR Alternate 2 Science Essence Statements.</i></p>

5 th Grade		5 th Grade
(12) Organisms and environments. The student describes patterns, cycles, systems, and relationships within environments. The student is expected to:		(5.9) Organisms and environments. The student knows that there are relationships, systems, and cycles within environments. (Readiness and Supporting Standard) Essence Statement Knows that there are relationships and characteristics within environments that support organisms.
5.12.A Observe and describe how a variety of organisms survive by interacting with biotic and abiotic factors in a healthy ecosystem.		
5.12.B Predict how changes in the ecosystem affect the cycling of matter and flow of energy in a food web.		
5.12.C Describe a healthy ecosystem and how human activities can be beneficial or harmful to an ecosystem.		(5.10) Organisms and environments. The student knows that organisms have structures and behaviors that help them survive within their environments. (Readiness Standard) Essence Statement Knows that organisms undergo similar life processes and have structures and behaviors that help them survive within their environments.
(13) Organisms and environments. The student knows that organisms undergo similar life processes and have structures and behaviors that help them survive within their environments. The student is expected to:		
5.13.A Analyze the structures and functions of different species to identify how organisms survive in the same environment.		
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.		
n2y Instructional Targets	n2y Intermediate Grade Band Units	n2y Supporting Activities
<ul style="list-style-type: none">● Demonstrate an understanding of the life cycles of plants.● Demonstrate an understanding of the life cycles of animals.● Identify how structures of living things help plants and animals survive (leaves on a plant, wings on a bird, etc.).● Identify how animals receive information (senses).● Recognize how a plant uses energy from sunlight.● Understand food webs and chains as interactions between producers and consumers.● Observe in what ways an offspring resembles its parents.● Identify environmental changes that affect plants and animals (natural disasters, seasons, etc.).● Recognize that fossils reveal information about plants and animals that lived long ago.	Unique Keeping My Body Healthy (Unit 5) See How They Grow (Unit 9) Living in an Ecosystem (Unit 12) They Look Alike! (Unit 29)	Unique n2y Library/Science Books ULS Science and Social Studies Courses Standards Connection

n2y Differentiated Tasks		
Level 3	Level 2	Level 1
<ul style="list-style-type: none"> Students will explain the life cycle of a plant (e.g., seed to flower, fruit or vegetable) and conditions that affect growth. Students will explain the basic life cycle of an animal. Students will identify how physical or behavioral traits help animals live and survive in their environment (a bird's wings: flight; a fish's gills: breathing, etc.). Students will describe items using various senses. Students will identify that plants use sunlight, water and air to make their own food. Students will describe a basic food chain involving plants and animals. Students will describe ways an offspring resembles its parents. Students will explain how changes in the environment affect plants and animals. Students will identify fossils as proof of animals and plants that lived long ago. 	<ul style="list-style-type: none"> Students will sequence the process of a plant's growth from seed to flower, fruit or vegetable. Students will sequence the life cycle of an animal from egg to adult. Students will identify functions of an animal's features (beak to eat, wings to fly, etc.). Students will identify objects using the five senses. Students will identify that plants need the Sun to make their own food. Students will identify an animal's food source (lions and meat, rabbits and plants, etc.). Students will identify features of plants or animals that are like their parents. Students will sequence the effect of environmental change on plants and animals. Students will match a fossil to the organism from which it came. 	<ul style="list-style-type: none"> Students will identify a seed, leaf and/or flower or representation of a life cycle (e.g. chart, picture) from a narrowed field or errorless choice(s). Students will identify an egg, baby and/or adult animal or representation of a life cycle (e.g. chart, picture) from a narrowed field or errorless choice(s). Students will identify parts of an animal (legs, tail, etc.). Students will actively explore items using various senses. Students will identify that plants need the Sun. Students will identify plants and animals that are food. Students will match young animals or plants to the parent animals or mature plants. Students will identify an environmental change (natural disaster, season, etc.) that affects plants and animals. Students will identify animals and plants that lived long ago.

Standards for Physical Science		Grades 3–5
Texas Essential Knowledge and Skills for Science (TEKS)	STAAR Alternate 2 Science Essence Statements	
3rd Grade	3rd Grade	
<p>(6) Matter and energy. The student knows that matter has measurable physical properties that determine how matter is identified, classified, changed, and used. The student is expected to:</p> <p>3.6.A Measure, test, and record physical properties of matter, including temperature, mass, magnetism, and the ability to sink or float in water.</p> <p>3.6.B Describe and classify samples of matter as solids, liquids, and gasses and demonstrate that solids have a definite shape and that liquids and gasses take the shape of their container.</p> <p>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).</p> <p>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.</p>	<p>(3.5) Matter and energy. The student knows that matter has measurable physical properties, and those properties determine how matter is classified, changed, and used. (Supporting Standard) Essence Statement Identifies and classifies matter by its physical properties and determines how matter is changed.</p>	
<p>(7) Force, motion, and energy. The student knows the nature of forces and the patterns of their interactions. The student is expected to:</p> <p>3.7.A Demonstrate and describe forces acting on an object in contact or at a distance, including magnetism, gravity, and pushes and pulls.</p> <p>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.</p>		
<p>(8) Force, motion, and energy. The student knows that energy is everywhere and can be observed in cycles, patterns, and systems. The student is expected to:</p> <p>3.8.A Identify everyday examples of energy, including light, sound, thermal, and mechanical.</p> <p>3.8.B Plan and conduct investigations that demonstrate how the speed of an object is related to its mechanical energy.</p>		
4th Grade	4th Grade	
<p>(6) Matter and energy. The student knows that matter has measurable physical properties that determine how matter is identified, classified, changed, and used. The student is expected to:</p> <p>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).</p> <p>4.6.B Investigate and compare a variety of mixtures, including solutions that are composed of liquids in liquids and solids in liquids.</p> <p>4.6.C Demonstrate that matter is conserved when mixtures such as soil and water or oil and water are formed.</p>	<p><i>Not addressed in the STAAR Alternate 2 Science Essence Statements.</i></p>	
<p>(7) Force, motion, and energy. The student knows the nature of forces and the patterns of their interactions. 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.</p>		
<p>(8) Force, motion, and energy. The student knows that energy is everywhere and can be observed in cycles, patterns, and systems. The student is expected to:</p> <p>4.8.A Investigate and identify the transfer of energy by objects in motion, waves in water, and sound.</p> <p>4.8.B Identify conductors and insulators of thermal and electrical energy.</p> <p>4.8.C Demonstrate and describe how electrical energy travels in a closed path that can produce light and thermal energy.</p>		

5 th Grade		5 th Grade
(6) Matter and energy. The student knows that matter has measurable physical properties that determine how matter is identified, classified, changed, and used. The student is expected to: 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. 5.6.B Demonstrate and explain that some mixtures maintain physical properties of their substances such as iron filings and sand or sand and water. 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. 5.6.D Illustrate how matter is made up of particles that are too small to be seen such as air in a balloon.		(5.5) Matter and energy. The student knows that matter has measurable physical properties and those properties determine how matter is classified, changed, and used. (Readiness and Supporting Standard) Essence Statement Identifies and classifies matter by its physical properties and determines how matter is changed.
(7) Force, motion, and energy. The student knows the nature of forces and the patterns of their interactions. The student is expected to: 5.7.A Investigate and explain how equal and unequal forces acting on an object cause patterns of motion and transfer of energy. 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.		
(8) Force, motion, and energy. The student knows that energy is everywhere and can be observed in cycles, patterns, and systems. The student is expected to: 5.8.A Investigate and describe the transformation of energy in systems such as energy in a flashlight battery that changes from chemical energy to electrical energy to light energy. 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. 5.8.C Demonstrate and explain how light travels in a straight line and can be reflected, refracted, or absorbed.		(5.6) Force, motion, and energy. The student knows that energy occurs in many forms and can be observed in cycles, patterns, and systems. (Readiness and Supporting Standard) Essence Statement Recognizes force, motion, and energy and their relationships.
n2y Instructional Targets	n2y Intermediate Grade Band Units	
<ul style="list-style-type: none">● Describe the effect of a force on an object.● Describe the motion of objects (force, speed, etc.).● Observe and identify common forms of energy (heat, light, sound; electric and magnetic sources).● Observe ways that electricity transfers to make things work.● Recognize sources of sound.● Recognize sources of light.● Recognize states of matter: liquid, solid, gas.● Observe simple physical changes (melting, freezing, etc.).	Unique Make It Move (Unit 2) It's Just a Phase (Unit 15) Energy Around Us (Unit 17) Light and Sound on the Move (Unit 27)	Unique n2y Library/Science Books ULS Science and Social Studies Courses Standards Connection

n2y Differentiated Tasks		
Level 3	Level 2	Level 1
<ul style="list-style-type: none"> Students will describe the effect of force such as gravity on an object. Students will identify the motion of an object (throwing a ball, pulling a wagon, etc.) and describe that motion in terms of a push/pull force. Students will identify common forms of energy. Students will describe ways that electricity, as a source of energy, contributes to daily life (light for reading, heat or cooling for comfort, etc.). Students will describe how sound travels to the ears. Students will describe how light allows objects to be seen. Students will classify and define matter as solid, liquid or gas. Students will describe physical changes in matter within real-world situations (size, shape, or appearance). 	<ul style="list-style-type: none"> Students will identify the effects of forces such as gravity on an object. Students will describe the movement of an object as fast or slow. Students will demonstrate how common forms of energy can be used. Students will identify appliances and tools that need electricity to work (refrigerator, drill, etc.). Students will identify objects that make sound. Students will identify sources of light and the effect of light on objects. Students will sort common objects and materials as solid, liquid or gas. Students will identify the cause of a physical change (melting, heat, etc.). 	<ul style="list-style-type: none"> Students will participate in the demonstration of force such as gravity on an object. Students will identify the patterned movement of an object. Students will participate in the demonstration of energy use. Students will identify electrical appliances that provide light or sound (lamp, CD player, etc.). Students will participate in the demonstration of sound creation. Students will participate in the demonstration of the effect of light on an object. Students will identify an item as a solid or a liquid. Students will actively participate in creating a physical change to matter.

Standards for Scientific Inquiry/Engineering, Technology, and Applications of Science		Grades 3–5
Texas Essential Knowledge and Skills for Science (TEKS)	STAAR Alternate 2 Science Essence Statements	
3 rd Grade	3 rd Grade	
(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:	<i>Scientific Inquiry is not addressed in the STAAR Alternate 2 Essence Statements for this grade band, however ULS provides these instructional targets for practice.</i>	
3.1.A Ask questions and define problems based on observations or information from text, phenomena, models, or investigations.		
3.1.B Use scientific practices to plan and conduct descriptive investigations and use engineering practices to design solutions to problems.		
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.		
3.1.D Use tools, including hand lenses; metric rulers; Celsius thermometers; wind vanes; rain gauges; graduated cylinders; beakers; digital scales; hot plates; meter sticks; magnets; notebooks; Sun, Earth, Moon system models; timing devices; materials to support observation of habitats of organisms such as terrariums, aquariums, and collecting nets; and materials to support digital data collection such as computers, tablets, and cameras, to observe, measure, test, and analyze information.		
3.1.E Collect observations and measurements as evidence.		
3.1.F Construct appropriate graphic organizers 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.		
3.1.G Develop and use models to represent phenomena, objects, and processes or design a prototype for a solution to a problem.		
(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:		
3.2.A Identify advantages and limitations of models such as their size, scale, properties, and materials.		
3.2.B Analyze data by identifying any significant features, patterns, or sources of error.		
3.2.C Use mathematical calculations to compare patterns and relationships.		
3.2.D Evaluate a design or object using criteria.		
(3) Scientific and engineering practices. The student develops evidence-based explanations and communicates findings, conclusions, and proposed solutions. The student is expected to:		
3.3.A Develop explanations and propose solutions supported by data and models.		
3.3.B Communicate explanations and solutions individually and collaboratively in a variety of settings and formats.		
3.3.C Listen actively to others' explanations to identify relevant evidence and engage respectfully in scientific discussion.		
(4) Scientific and engineering practices. The student knows the contributions of scientists and recognizes the importance of scientific research and innovation for society. The student is expected to:		
3.4.A Explain how scientific discoveries and innovative solutions to problems impact science and society.		
3.4.B Research and explore resources such as museums, libraries, professional organizations, private companies, online platforms, and mentors employed in a science, technology, engineering, and mathematics (STEM) field to investigate STEM careers.		
(5) Recurring themes and concepts. The student understands that recurring themes and concepts provide a framework for making connections across disciplines. The student is expected to:		
3.5.A Identify and use patterns to explain scientific phenomena or to design solutions.		
3.5.B Identify and investigate cause-and-effect relationships to explain scientific phenomena or analyze problems.		

3.5.C Use scale, proportion, and quantity to describe, compare, or model different systems.	
3.5.D Examine and model the parts of a system and their interdependence in the function of the system.	
3.5.E Investigate the flow of energy and cycling of matter through systems.	
3.5.F Explain the relationship between the structure and function of objects, organisms, and systems.	
3.5.G Explain how factors or conditions impact stability and change in objects, organisms, and systems.	
4th Grade	
(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:	
4.1.A Ask questions and define problems based on observations or information from text, phenomena, models, or investigations.	
4.1.B Use scientific practices to plan and conduct descriptive investigations and use engineering practices to design solutions to problems.	
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.	
4.1.D Use tools, including hand lenses; metric rulers; Celsius thermometers; calculators; laser pointers; mirrors; digital scales; balances; graduated cylinders; beakers; hot plates; meter sticks; magnets; notebooks; timing devices; sieves; materials for building circuits; materials to support observation of habitats of organisms such as terrariums, aquariums, and collecting nets; and materials to support digital data collection such as computers, tablets, and cameras, to observe, measure, test, and analyze information.	
4.1.E Collect observations and measurements as evidence.	
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.	
4.1.G Develop and use models to represent phenomena, objects, and processes or design a prototype for a solution to a problem.	
(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:	
4.2.A Identify advantages and limitations of models such as their size, scale, properties, and materials.	
4.2.B Analyze data by identifying any significant features, patterns, or sources of error.	
4.2.C Use mathematical calculations to compare patterns and relationships.	
4.2.D Evaluate a design or object using criteria.	
(3) Scientific and engineering practices. The student develops evidence-based explanations and communicates findings, conclusions, and proposed solutions. The student is expected to:	
4.3.A Develop explanations and propose solutions supported by data and models.	
4.3.B Communicate explanations and solutions individually and collaboratively in a variety of settings and formats.	
4.3.C Listen actively to others' explanations to identify relevant evidence and engage respectfully in scientific discussion.	
(4) Scientific and engineering practices. The student knows the contributions of scientists and recognizes the importance of scientific research and innovation for society. The student is expected to:	
4.4.A Explain how scientific discoveries and innovative solutions to problems impact science and society.	
4.4.B Research and explore resources such as museums, libraries, professional organizations, private companies, online platforms, and mentors employed in a science, technology, engineering, and mathematics (STEM) field to investigate STEM careers.	

<p>(5) Recurring themes and concepts. The student understands that recurring themes and concepts provide a framework for making connections across disciplines. The student is expected to:</p>	
<p>4.5.A Identify and use patterns to explain scientific phenomena or to design solutions.</p>	
<p>4.5.B Identify and investigate cause-and-effect relationships to explain scientific phenomena or analyze problems.</p>	
<p>4.5.C Use scale, proportion, and quantity to describe, compare, or model different systems.</p>	
<p>4.5.D Examine and model the parts of a system and their interdependence in the function of the system.</p>	
<p>4.5.E Investigate how energy flows and matter cycles through systems and how matter is conserved.</p>	
<p>4.6.F Explain the relationship between the structure and function of objects, organisms, and systems.</p>	
<p>4.6.G Explain how factors or conditions impact stability and change in objects, organisms, and systems.</p>	
<p>5th Grade</p>	
<p>(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:</p>	
<p>5.1.A Ask questions and define problems based on observations or information from text, phenomena, models, or investigations.</p>	
<p>5.1.B Use scientific practices to plan and conduct descriptive and simple experimental investigations and use engineering practices to design solutions to problems.</p>	
<p>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.</p>	
<p>5.1.D Use tools, including calculators, microscopes, hand lenses, metric rulers, Celsius thermometers, prisms, concave and convex lenses, laser pointers, mirrors, digital scales, balances, spring scales, graduated cylinders, beakers, hot plates, meter sticks, magnets, collecting nets, notebooks, timing devices, materials for building circuits, materials to support observations of habitats or organisms such as terrariums and aquariums, and materials to support digital data collection such as computers, tablets, and cameras to observe, measure, test, and analyze information.</p>	
<p>5.1.E Collect observations and measurements as evidence.</p>	
<p>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.</p>	
<p>5.1.G Develop and use models to represent phenomena, objects, and processes or design a prototype for a solution to a problem.</p>	
<p>(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:</p>	
<p>5.2.A Identify advantages and limitations of models such as their size, scale, properties, and materials.</p>	
<p>5.2.B Analyze data by identifying any significant features, patterns, or sources of error.</p>	
<p>5.2.C Use mathematical calculations to compare patterns and relationships.</p>	
<p>5.2.D Evaluate experimental and engineering designs.</p>	
<p>(3) Scientific and engineering practices. The student develops evidence-based explanations and communicates findings, conclusions, and proposed solutions. The student is expected to:</p>	
<p>5.3.A Develop explanations and propose solutions supported by data and models.</p>	
<p>5.3.B Communicate explanations and solutions individually and collaboratively in a variety of settings and formats.</p>	
<p>5.3.C Listen actively to others' explanations to identify relevant evidence and engage respectfully in scientific discussion.</p>	

(4) Scientific and engineering practices. The student knows the contributions of scientists and recognizes the importance of scientific research and innovation for society. The student is expected to: 5.4.A Explain how scientific discoveries and innovative solutions to problems impact science and society. 5.4.B Research and explore resources such as museums, libraries, professional organizations, private companies, online platforms, and mentors employed in a science, technology, engineering, and mathematics (STEM) field to investigate STEM careers.		
(5) Recurring themes and concepts. The student understands that recurring themes and concepts provide a framework for making connections across disciplines. The student is expected to: 5.5.A Identify and use patterns to explain scientific phenomena or to design solutions. 5.5.B Identify and investigate cause-and-effect relationships to explain scientific phenomena or analyze problems. 5.5.C Use scale, proportion, and quantity to describe, compare, or model different systems. 5.5.D Examine and model the parts of a system and their interdependence in the function of the system. 5.5.E Investigate how energy flows and matter cycles through systems and how matter is conserved. 5.5.F Explain the relationship between the structure and function of objects, organisms, and systems. 5.5.G Explain how factors or conditions impact stability and change in objects, organisms, and systems.		
n2y Instructional Targets	n2y Intermediate Grade Band Units	n2y Supporting Activities
<ul style="list-style-type: none">● Observe and ask questions about the natural environment.● Plan and conduct simple investigations.● Use tools to gather data.● Analyze data to reach an explanation.● Communicate with others about investigations.	Unique	Unique
	Intermediate Science Fair (Unit 22)	n2y Library/Science Books ULS Science and Social Studies Courses
	Unique Monthly Lessons	News2you
	Lesson 28: Science Experiment	Worksheets: Science Experiment
n2y Differentiated Tasks		
Level 3	Level 2	Level 1
<ul style="list-style-type: none">● Students will follow steps of a scientific process related to grades 3–5 science topics.	<ul style="list-style-type: none">● With support, students will follow steps of a scientific process related to grades 3–5 science topics.	<ul style="list-style-type: none">● Students will actively participate in a scientific process related to grades 3–5 science topics.

Standards for Earth and Space Science		Grades 6–8
Texas Essential Knowledge and Skills for Science (TEKS)	STAAR Alternate 2 Science Essence Statements	
6 th Grade	6 th Grade	
(9) Earth and space. The student models the cyclical movements of the Sun, Earth, and Moon and describes their effects. The student is expected to: 6.9.A Model and illustrate how the tilted Earth revolves around the Sun, causing changes in seasons.	Not addressed in the STAAR Alternate 2 Science Essence Statements.	
6.9.B Describe and predict how the positions of the Earth, Sun, and Moon cause daily, spring, and neap cycles of ocean tides due to gravitational forces.		
(10) Earth and space. The student understands the rock cycle and the structure of Earth. The student is expected to: 6.10.A Differentiate between the biosphere, hydrosphere, atmosphere, and geosphere and identify components of each system.		
6.10.B Model and describe the layers of Earth, including the inner core, outer core, mantle, and crust.		
6.10.C Describe how metamorphic, igneous, and sedimentary rocks form and change through geologic processes in the rock cycle.		
(11) Earth and space. The student understands how resources are managed. The student is expected to: 6.11.A Research and describe why resource management is important in reducing global energy poverty, malnutrition, and air and water pollution.		
6.11.B Explain how conservation, increased efficiency, and technology can help manage air, water, soil, and energy resources.		
7 th Grade	7 th Grade	
(9) Earth and space. The student understands the patterns of movement, organization, and characteristics of components of our solar system. The student is expected to: 7.9.A Describe the physical properties, locations, and movements of the Sun, planets, moons, meteors, asteroids, comets, Kuiper belt, and Oort cloud.	Not addressed in the STAAR Alternate 2 Science Essence Statements.	
7.9.B Describe how gravity governs motion within Earth's solar system.		
7.9.C Analyze the characteristics of Earth that allow life to exist such as the proximity of the Sun, presence of water, and composition of the atmosphere.		
(10) Earth and space. The student understands the causes and effects of plate tectonics. The student is expected to: 7.10.A Describe the evidence that supports that Earth has changed over time, including fossil evidence, plate tectonics, and superposition.		
7.10.B Describe how plate tectonics causes ocean basin formation, earthquakes, mountain building, and volcanic eruptions, including supervolcanoes and hot spots.		
(11) Earth and space. The student understands how human activity can impact the hydrosphere. The student is expected to: 7.11.A Analyze the beneficial and harmful influences of human activity on groundwater and surface water in a watershed.		
7.11.B Describe human dependence and influence on ocean systems and explain how human activities impact these systems.		

8 th Grade		8 th Grade	
(9) Earth and space. The student describes the characteristics of the universe and the relative scale of its components. The student is expected to: 8.9.A Describe the life cycle of stars and compare and classify stars using the Hertzsprung-Russell diagram. 8.9.B Categorize galaxies as spiral, elliptical, and irregular and locate Earth's solar system within the Milky Way galaxy. 8.9.C Research and analyze scientific data used as evidence to develop scientific theories that describe the origin of the universe.		(8.7) Earth and space. The student knows the effects resulting from cyclical movements of the Sun, Earth, and Moon. (Readiness and Supporting Standard) Essence Statement Knows that the phases of the moon, the seasons on Earth, and the day and night cycle are the result of cyclical interactions among Earth, the Moon, and the Sun.	
(10) Earth and space. The student knows that interactions between Earth, ocean, and weather systems impact climate. The student is expected to: 8.10.A Describe how energy from the Sun, hydrosphere, and atmosphere interact and influence weather and climate. 8.10.B Identify global patterns of atmospheric movement and how they influence local weather. 8.10.C Describe the interactions between ocean currents and air masses that produce tropical cyclones, including typhoons and hurricanes.			
(11) Earth and space. The student knows that natural events and human activity can impact global climate. The student is expected to: 8.11.A Use scientific evidence to describe how natural events, including volcanic eruptions, meteor impacts, abrupt changes in ocean currents, and the release and absorption of greenhouse gasses influence climate. 8.11.B Use scientific evidence to describe how human activities, including the release of greenhouse gasses, deforestation, and urbanization, can influence climate. 8.11.C Describe the carbon cycle.			
n2y Instructional Targets <ul style="list-style-type: none">● Explore the relationship of Earth to the Moon, Sun and planets.● Explore the phases of the Moon.● Recognize that the study of rock layers and fossils tells about the age of Earth.● Observe and compare rocks and minerals.● Recognize geological events and processes that can change the physical features of Earth's surface.● Explain the water cycle.● Identify types of weather patterns.● Explore the Earth's atmosphere, including changes in the atmosphere (air pollution, temperature, etc.).● Explain reasons for conservation and identify ways to reduce, reuse and recycle that will benefit the environment.			n2y Middle School Grade Band Units Unique All Kinds of Weather (Unit 7) Caring for Our Earth (Unit 19) Our Place in Space (Unit 23)
			n2y Supporting Activities Unique n2y Library/Science Books Core Materials: Weather Report ULS Science and Social Studies Courses Standards Connection

n2y Differentiated Tasks		
Level 3	Level 2	Level 1
<ul style="list-style-type: none"> Students will create a model that shows the relationship between Earth, the Sun, Moon and planets in the solar system. Students will explain lunar patterns. Students will explain how rocks and fossils are used to tell the age of the Earth. Students will describe common minerals and rocks and their uses to human life (granite buildings, coal for heat, etc.). Students will describe ways that a geological event (earthquake, flood, volcano, tornado, hurricane, plate movement, weathering, etc.) changes Earth's surface. Students will describe the water cycle. Students will describe how changes in weather occur. Students will describe the Earth's atmosphere and human activities that can change it. Students will recognize ways to protect Earth's resources (recycling, reducing waste, reforestation, etc.). 	<ul style="list-style-type: none"> Students will identify Earth, the Sun and Moon within the solar system. Students will recognize phases of the Moon (full Moon, half Moon, etc.). Students will identify fossils. Students will identify an object made from rocks or minerals (sand in a sandbox, coins, jewelry etc.). Students will identify geological processes and how they change the Earth's surface (earthquake, flood, volcano, tornado, hurricane, plate movement, weathering, etc.). Students will identify water in different forms within the water cycle. Students will identify patterns in weather and temperature in relation to the seasons or temperature of the air in an area. Students will identify human activities that can affect the Earth's atmosphere. Students will identify materials that can be recycled, reused or reduced. 	<ul style="list-style-type: none"> Students will identify Earth as the planet humans live on. Students will recognize that the Sun can be seen from Earth by day and the Moon by night. Students will actively participate in the creation of a model fossil. Students will identify items made from rock. Students will identify common geological events (earthquake, flood, volcano, tornado, hurricane, plate movement, weathering, etc.). Students will identify rain and snow as forms of precipitation. Students will identify weather in terms of temperature and conditions (hot and sunny, cold and snowy, etc.). Students will select a change to air caused by humans. Students will actively participate in a community project meant to help the environment.

Standards for Life Science		Grades 6–8	
Texas Essential Knowledge and Skills for Science (TEKS)		STAAR Alternate 2 Science Essence Statements	
6 th Grade		6 th Grade	
<p>(12) Organisms and environments. The student knows that interdependence occurs between living systems and the environment. The student is expected to:</p> <p>6.12.A Investigate how organisms and populations in an ecosystem depend on and may compete for biotic factors such as food and abiotic factors such as availability of light and water, range of temperatures, or soil composition.</p> <p>6.12.B Describe and give examples of predatory, competitive, and symbiotic relationships between organisms, including mutualism, parasitism, and commensalism.</p> <p>6.12.C Describe the hierarchical organization of organism, population, and community within an ecosystem.</p>		<p>(6.12) Organisms and environments. The student knows all organisms are classified into domains and kingdoms. Organisms within these taxonomic groups share similar characteristics that allow them to interact with the living and nonliving parts of their ecosystem. (Supporting Standard)</p> <p>Essence Statement Recognizes the classification of organisms.</p>	
<p>(13) Organisms and environments. The student knows that organisms have an organizational structure and variations can influence survival of populations. The student is expected to:</p> <p>6.13.A Describe the historical development of cell theory and explain how organisms are composed of one or more cells, which come from pre-existing cells and are the basic unit of structure and function.</p> <p>6.13.B Identify and compare the basic characteristics of organisms, including prokaryotic and eukaryotic, unicellular and multicellular, and autotrophic and heterotrophic.</p> <p>6.13.C Describe how variations within a population can be an advantage or disadvantage to the survival of a population as environments change.</p>			
7 th Grade			
<p>(12) Organisms and environments. The student understands that ecosystems are dependent upon the cycling of matter and the flow of energy. The student is expected to:</p> <p>7.12.A Diagram the flow of energy within trophic levels and describe how the available energy decreases in successive trophic levels in energy pyramids.</p> <p>7.12.B Describe how ecosystems are sustained by the continuous flow of energy and the recycling of matter and nutrients within the biosphere.</p>			<p>(7.10) Organisms and environments. The student knows that there is a relationship between organisms and the environment. (Supporting Standard)</p> <p>Essence Statement Knows the importance of biodiversity to the health of an ecosystem.</p>
<p>(13) Organisms and environments. The student knows how systems are organized and function to support the health of an organism and how traits are inherited. The student is expected to:</p> <p>7.13.A Identify and model the main functions of the systems of the human organism, including the circulatory, respiratory, skeletal, muscular, digestive, urinary, reproductive, integumentary, nervous, immune, and endocrine systems.</p> <p>7.13.B Describe the hierarchical organization of cells, tissues, organs, and organ systems within plants and animals.</p> <p>7.13.C Compare the results of asexual and sexual reproduction of plants and animals in relation to the diversity of offspring and the changes in the population over time.</p> <p>7.13.D Describe and give examples of how natural and artificial selection change the occurrence of traits in a population over generations.</p>			<p>(7.11) Organisms and environments. The student knows that populations and species demonstrate variation and inherit many of their unique traits through gradual processes over many generations. (Supporting Standard)</p> <p>Essence Statement Recognizes the interdependence of organisms with each other and with their environment.</p>
<p>(14) Organisms and environments. The student knows how the taxonomic system is used to describe relationships between organisms. The student is expected to:</p> <p>7.14.A Describe the taxonomic system that categorizes organisms based on similarities and differences shared among groups.</p> <p>7.14.B Describe the characteristics of the recognized kingdoms and their importance in ecosystems such as bacteria aiding digestion or fungi decomposing organic matter.</p>		<p>(7.12) Organisms and environments. The student knows that living systems at all levels of organization demonstrate the complementary nature of structure and function. (Supporting Standard)</p> <p>Essence Statement Recognizes the classification of organisms.</p>	

8 th Grade		8 th Grade
(12) Organisms and environments. The student understands stability and change in populations and ecosystems. The student is expected to: 8.12.A Explain how disruptions such as population changes, natural disasters, and human intervention impact the transfer of energy in food webs in ecosystems. 8.12.B Describe how primary and secondary ecological succession affect populations and species diversity after ecosystems are disrupted by natural events or human activity. 8.12.C Describe how biodiversity contributes to the stability and sustainability of an ecosystem and the health of the organisms within the ecosystem.		Not addressed in the STAAR Alternate 2 Science Essence Statements
(13) Organisms and environments. The student knows how cell functions support the health of an organism and how adaptation and variation relate to survival. The student is expected to: 8.13.A Identify the function of the cell membrane, cell wall, nucleus, ribosomes, cytoplasm, mitochondria, chloroplasts, and vacuoles in plant or animal cells. 8.13.B Describe the function of genes within chromosomes in determining inherited traits of offspring. 8.13.C Describe how variations of traits within a population lead to structural, behavioral, and physiological adaptations that influence the likelihood of survival and reproductive success of a species over generations.		
n2y Instructional Targets <ul style="list-style-type: none">● Recognize that living things are made of cells.● Recognize that living things are made of cells that have a function: Cells make up tissues and organs.● Recognize that living things are made of cells that have a function: plant structures.● Understand basic reproduction processes for plants and animals.● Explain how plants and animals use behaviors and structures to attract mates (birds dance, colorful flowers, etc.).● Observe the interdependence among people, plants and animals through a simple food chain.● Identify the basic process that plants use to make food (photosynthesis).● Identify characteristics of different biomes.● Identify traits inherited through genes (DNA).● Recognize that animals and plants evolve.	n2y Middle School Grade Band Units Unique My Body, My Health (Unit 5) Plants in Gardens and Fields (Unit 9) What Is an Ecosystem? (Unit 12) Why Are My Eyes Brown? (Unit 29)	
n2y Supporting Activities Unique n2y Library/Science Books ULS Science and Social Studies Courses Standards Connection		

n2y Differentiated Tasks		
Level 3	Level 2	Level 1
<ul style="list-style-type: none"> Students will identify things that contain cells by indicating whether they are living or nonliving. Students will describe the function of various body systems (circulatory, excretory, digestive, respiratory, muscular, and nervous system.) Students will describe the function of various structures of a plant (stem, leaves, etc.). Students will describe the basic process of reproduction in plants and animals. Students will identify behaviors and structures used by plants and animals to attract others. Students will describe a simple food chain that shows the interdependence of people, plants and animals. Students will explain the basic process of photosynthesis describing how plants make their food. Students will describe different biomes of the world, including basic characteristics and plants and animals of the biome. Students will describe how traits are inherited from parents through genes. Students will explain the similarities and differences between plants and animals long ago and today. 	<ul style="list-style-type: none"> Students will identify living and nonliving things. Students will identify various body systems and their function. Students will identify various plant structures and their function. Students will identify basic reproduction processes in plants and animals by identifying how they deliver their young (birds lay eggs, mammals carry their young, plants have seeds, etc.). Students will identify behaviors and structures in plants or animals used to attract others. Students will identify items in a simple food chain. Students will understand that plants need sunlight to make their food. Students will match plants and animals to a specific biome. Students will identify traits inherited from parents (eye color, hair color, etc.). Students will match traits from plants and animals long ago to those of today. 	<ul style="list-style-type: none"> Students will identify things that are living. Students will identify basic body parts that make up a system (heart, lungs, stomach, etc.). Students will identify the flower or seed of a plant. Students will identify seeds, eggs, and various other ways plants and animals reproduce. Students will identify an animal behavior, or a plant structure used to attract a mate. Students will select items that belong in a simple food chain. Students will identify that plants need water and the Sun to grow. Students will select animals or plants that live in a specific biome. Students will identify their own inherited traits (eye color, hair color, etc.). Students will identify plants and animals that lived long ago.

Standards for Physical Science		Grades 6–8
Texas Essential Knowledge and Skills for Science (TEKS)	STAAR Alternate 2 Science Essence Statements	
6th Grade	6th Grade	
(6) Matter and energy. The student knows that matter is made of atoms, can be classified according to its properties, and can undergo changes. The student is expected to: 6.6.A Compare solids, liquids, and gasses in terms of their structure, shape, volume, and kinetic energy of atoms and molecules. 6.6.B Investigate the physical properties of matter to distinguish between pure substances, homogeneous mixtures (solutions), and heterogeneous mixtures. 6.6.C Identify elements on the periodic table as metals, nonmetals, metalloids, and rare Earth elements based on their physical properties and importance to modern life. 6.6.D Compare the density of substances relative to various fluids. 6.6.E Identify the formation of a new substance by using the evidence of a possible chemical change, including production of a gas, change in thermal energy, production of a precipitate, and color change.	(6.6) Matter and energy. The student knows matter has physical properties that can be used for classification. (Supporting Standard) Essence Statement Recognizes the physical and chemical properties and changes of matter and how physical properties are used for classification.	
(7) Force, motion, and energy. The student knows the nature of forces and their role in systems that experience stability or change. The student is expected to: 6.7.A Identify and explain how forces act on objects, including gravity, friction, magnetism, applied forces, and normal forces, using real-world applications. 6.7.B Calculate the net force on an object in a horizontal or vertical direction using diagrams and determine if the forces are balanced or unbalanced. 6.7.C Identify simultaneous force pairs that are equal in magnitude and opposite in direction that result from the interactions between objects using Newton's Third Law of Motion.	<i>Not addressed in the STAAR Alternate 2 Science Essence Statements</i>	
(8) Force, motion, and energy. The student knows that the total energy in systems is conserved through energy transfers and transformations. The student is expected to: 6.8.A Compare and contrast gravitational, elastic, and chemical potential energies with kinetic energy. 6.8.B Describe how energy is conserved through transfers and transformations in systems such as electrical circuits, food webs, amusement park rides, or photosynthesis. 6.8.C Explain how energy is transferred through transverse and longitudinal waves.	(6.8) Force, motion, and energy. The student knows force and motion are related to potential and kinetic energy. (Supporting Standard) Essence Statement Recognizes that force and motion are related to potential and kinetic energy.	
7th Grade	7th Grade	
(6) Matter and energy. The student distinguishes between elements and compounds, classifies changes in matter, and understands the properties of solutions. The student is expected to: 7.6.A Compare and contrast elements and compounds in terms of atoms and molecules, chemical symbols, and chemical formulas. 7.6.B Use the periodic table to identify the atoms and the number of each kind within a chemical formula. 7.6.C Distinguish between physical and chemical changes in matter.	7.6) Matter and energy. The student knows that matter has physical and chemical properties and can undergo physical and chemical changes. (Supporting Standard) Essence Statement Recognizes the physical and chemical properties and changes of matter and how physical properties are used for classification.	
7.6.D Describe aqueous solutions in terms of solute and solvent, concentration, and dilution. 7.6.E Investigate and model how temperature, surface area, and agitation affect the rate of dissolution of solid solutes in aqueous solutions.	<i>Not addressed in the STAAR Alternate 2 Science Essence Statements.</i>	
(7) Force, motion, and energy. The student describes the cause-and-effect relationship between force and motion. The student is expected to:		

7.7.A Calculate average speed using distance and time measurements from investigations.	
7.7.B Distinguish between speed and velocity in linear motion in terms of distance, displacement, and direction.	
7.7.C Measure, record, and interpret an object's motion using distance-time graphs.	
7.7.D Analyze the effect of balanced and unbalanced forces on the state of motion of an object using Newton's First Law of Motion.	
(8) Force, motion, and energy. The student understands the behavior of thermal energy as it flows into and out of systems. The student is expected to:	
7.8.A Investigate methods of thermal energy transfer into and out of systems, including conduction, convection, and radiation.	
7.8.B Investigate how thermal energy moves in a predictable pattern from warmer to cooler until all substances within the system reach thermal equilibrium.	
7.8.C Explain the relationship between temperature and the kinetic energy of the particles within a substance.	
8th Grade	
(6) Matter and energy. The student understands that matter can be classified according to its properties and matter is conserved in chemical changes that occur within closed systems. The student is expected to:	
8.6.A Explain by modeling how matter is classified as elements, compounds, homogeneous mixtures, or heterogeneous mixtures.	
8.6.B Use the periodic table to identify the atoms involved in chemical reactions.	
8.6.C Describe the properties of cohesion, adhesion, and surface tension in water and relate to observable phenomena such as the formation of droplets, transport in plants, and insects walking on water.	
8.6.D Compare and contrast the properties of acids and bases, including pH relative to water.	
8.6.E Investigate how mass is conserved in chemical reactions and relate conservation of mass to the rearrangement of atoms using chemical equations, including photosynthesis.	(8.5) Matter and energy. The student knows that matter is composed of atoms and has chemical and physical properties. (Readiness Standard) Essence Statement Recognizes that matter is composed of atoms, has distinct properties, and interacts with energy.
(7) Force, motion, and energy. The student understands the relationship between force and motion within systems. The student is expected to:	
8.7.A Calculate and analyze how the acceleration of an object is dependent upon the net force acting on the object and the mass of the object using Newton's Second Law of Motion.	
8.7.B Investigate and describe how Newton's three laws of motion act simultaneously within systems such as in vehicle restraints, sports activities, amusement park rides, Earth's tectonic activities, and rocket launches.	
(8) Force, motion, and energy. The student knows how energy is transferred through waves. The student is expected to:	
8.8.A Compare the characteristics of amplitude, frequency, and wavelength in transverse waves, including the electromagnetic spectrum.	<i>Not addressed in the STAAR Alternate 2 Science Essence Statements.</i>
8.8.B Explain the use of electromagnetic waves in applications such as radiation therapy, wireless technologies, fiber optics, microwaves, ultraviolet sterilization, astronomical observations, and X-rays.	

n2y Instructional Targets	n2y Middle School Grade Band Units	n2y Supporting Activities
<ul style="list-style-type: none"> Explore applications of state of matter, including physical or chemical changes and observation of mixtures and compounds in real-world situations. Explore the motion of objects with variables, such as speed, distance and height. Recognize common elements from the Periodic Table of Elements (including metals and nonmetals). Explore gravitational and magnetic forces. Explore kinetic and potential energy. Identify ways that energy is transferred that results in a change of temperature. Explore waves (light and sound) and their interaction with various materials (reflected, absorbed or transmitted). Explore technology and ways in which it influences quality of life. 	Unique Objects on the Move (Unit 2) What a Change! (Unit 15) Buzzing With Energy (Unit 17) Making Waves: Light and Sound (Unit 27)	Unique n2y Library/Science Books ULS Science and Social Studies Courses Standards Connection
n2y Differentiated Tasks		
Level 3	Level 2	Level 1
<ul style="list-style-type: none"> Students will describe changes in matter within real-world situations, including physical changes (size, shape, state, or appearance) or chemical changes (transformation to a different kind of matter). Students will describe the motion of objects. Students will identify common metal and nonmetal elements with typical uses for these elements. Students will describe how motion, distance and speed of an object are affected by gravitational and magnetic forces. Students will identify and explore kinetic and potential energy of various objects. Students will explore the transfer of energy that results in heating or cooling. Students will describe the energy transfer of waves. Students will explore ways that electrical energy to a computer provides ways to work, play and communicate. 	<ul style="list-style-type: none"> Students will identify the cause for a change in a state of matter (water freezing into ice cubes, paper being cut into shapes, etc.). Students will identify the motion of an object. Students will identify objects made of metal and each object's use (pan for cooking, folding chair for sitting, etc.). Students will identify changes in the location and motion of an object caused by a gravitational or magnetic force. Students will sort pictures of objects or identify real objects as having kinetic and potential energy. Students will identify a change in temperature from hot to cold and from cold to hot. Students will identify a change in sound or light (e.g., on/off, loud/quiet). Students will identify tasks that can be completed on a computer because of an energy transfer (email, games, learning, etc.). 	<ul style="list-style-type: none"> Students will identify the state of matter before and after a change in that matter. Students will identify the movement of an object as fast or slow. Students will identify commonly used objects made of metal. Students will demonstrate the effects of a gravitational or magnetic force on an object. Students will demonstrate kinetic energy by setting an object in motion and demonstrate potential energy by displaying an object at rest. Students will identify an object as being hot or cold. Students will identify a change in sound or light (e.g., on/off, loud/quiet) from a narrowed field or errorless choice(s). Students will participate in tasks performed on a computer.

Standards for Scientific Inquiry/Engineering, Technology, and Applications of Science		Grades 6–8
Texas Essential Knowledge and Skills for Science (TEKS)		STAAR Alternate 2 Science Essence Statements
6 th Grade		Scientific Inquiry is not addressed in the STAAR Alternate 2 Essence Statements for this grade band, however ULS provides these instructional targets for practice.
(1) Scientific and engineering practices. The student, for at least 40% of instructional time, 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:		
6.1.A Ask questions and define problems based on observations or information from text, phenomena, models, or investigations.		
6.1.B Use scientific practices to plan and conduct descriptive, comparative, and experimental investigations and use engineering practices to design solutions to problems.		
6.1.C Use appropriate safety equipment and practices during laboratory, classroom, and field investigations as outlined in Texas Education Agency-approved safety standards.		
6.1.D Use appropriate tools such as graduated cylinders, metric rulers, periodic tables, balances, scales, thermometers, temperature probes, laboratory ware, timing devices, pH indicators, hot plates, models, microscopes, slides, life science models, petri dishes, dissecting kits, magnets, spring scales or force sensors, tools that model wave behavior, satellite images, hand lenses, and lab notebooks or journals.		
6.1.E Collect quantitative data using the International System of Units (SI) and qualitative data as evidence.		
6.1.F Construct appropriate tables, graphs, maps, and charts using repeated trials and means to organize data.		
6.1.G Develop and use models to represent phenomena, systems, processes, or solutions to engineering problems.		
6.1.H Distinguish between scientific hypotheses, theories, and laws.		
(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:		
6.2.A Identify advantages and limitations of models such as their size, scale, properties, and materials.		
6.2.B Analyze data by identifying any significant descriptive statistical features, patterns, sources of error, or limitations.		
6.2.C Use mathematical calculations to assess quantitative relationships in data.		
6.2.D Evaluate experimental and engineering designs.		
(3) Scientific and engineering practices. The student develops evidence-based explanations and communicates findings, conclusions, and proposed solutions. The student is expected to:		
6.3.A Develop explanations and propose solutions supported by data and models and consistent with scientific ideas, principles, and theories.		
6.3.B Communicate explanations and solutions individually and collaboratively in a variety of settings and formats.		
6.3.C Engage respectfully in scientific argumentation using applied scientific explanations and empirical evidence.		
(4) Scientific and engineering practices. The student knows the contributions of scientists and recognizes the importance of scientific research and innovation on society. The student is expected to:		
6.4.A Relate the impact of past and current research on scientific thought and society, including the process of science, cost-benefit analysis, and contributions of diverse scientists as related to the content.		
6.4.B Make informed decisions by evaluating evidence from multiple appropriate sources to assess the credibility, accuracy, cost-effectiveness, and methods used.		
6.4.C Research and explore resources such as museums, libraries, professional organizations, private companies, online platforms, and mentors employed in a science, technology, engineering, and mathematics (STEM) field to investigate STEM careers.		

<p>(5) Recurring themes and concepts. The student understands that recurring themes and concepts provide a framework for making connections across disciplines. The student is expected to:</p>	
<p>6.5.A Identify and apply patterns to understand and connect scientific phenomena or to design solutions.</p>	
<p>6.5.B Identify and investigate cause-and-effect relationships to explain scientific phenomena or analyze problems.</p>	
<p>6.5.C Analyze how differences in scale, proportion, or quantity affect a system's structure or performance.</p>	
<p>6.5.D Examine and model the parts of a system and their interdependence in the function of the system.</p>	
<p>6.5.E Analyze and explain how energy flows and matter cycles through systems and how energy and matter are conserved through a variety of systems.</p>	
<p>6.5.F Analyze and explain the complementary relationship between the structure and function of objects, organisms, and systems.</p>	
<p>6.5.G Analyze and explain how factors or conditions impact stability and change in objects, organisms, and systems.</p>	
<p>7th Grade</p>	
<p>(1) Scientific and engineering practices. The student, for at least 40% of instructional time, 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:</p>	
<p>7.1.A Ask questions and define problems based on observations or information from text, phenomena, models, or investigations.</p>	
<p>7.1.B Use scientific practices to plan and conduct descriptive, comparative, and experimental investigations and use engineering practices to design solutions to problems.</p>	
<p>7.1.C Use appropriate safety equipment and practices during laboratory, classroom, and field investigations as outlined in Texas Education Agency-approved safety standards.</p>	
<p>7.1.D Use appropriate tools such as graduated cylinders, metric rulers, periodic tables, balances, scales, thermometers, temperature probes, laboratory ware, timing devices, pH indicators, hot plates, models, microscopes, slides, life science models, petri dishes, dissecting kits, magnets, spring scales or force sensors, tools that model wave behavior, satellite images, hand lenses, and lab notebooks or journals.</p>	
<p>7.1.E Collect quantitative data using the International System of Units (SI) and qualitative data as evidence.</p>	
<p>7.1.F Construct appropriate tables, graphs, maps, and charts using repeated trials and means to organize data.</p>	
<p>7.1.G Develop and use models to represent phenomena, systems, processes, or solutions to engineering problems.</p>	
<p>7.1.H Distinguish between scientific hypotheses, theories, and laws.</p>	
<p>(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:</p>	
<p>7.2.A Identify advantages and limitations of models such as their size, scale, properties, and materials.</p>	
<p>7.2.B Analyze data by identifying any significant descriptive statistical features, patterns, sources of error, or limitations.</p>	
<p>7.2.C Use mathematical calculations to assess quantitative relationships in data.</p>	
<p>7.2.D Evaluate experimental and engineering designs.</p>	
<p>(3) Scientific and engineering practices. The student develops evidence-based explanations and communicates findings, conclusions, and proposed solutions. The student is expected to:</p>	
<p>7.3.A Develop explanations and propose solutions supported by data and models and consistent with scientific ideas, principles, and theories.</p>	
<p>7.3.B Communicate explanations and solutions individually and collaboratively in a variety of settings and formats.</p>	
<p>7.3.C Engage respectfully in scientific argumentation using applied scientific explanations and empirical evidence.</p>	

<p>(4) Scientific and engineering practices. The student knows the contributions of scientists and recognizes the importance of scientific research and innovation on society. The student is expected to:</p> <p>7.4.A Relate the impact of past and current research on scientific thought and society, including the process of science, cost-benefit analysis, and contributions of diverse scientists as related to the content.</p>	
<p>7.4.B Make informed decisions by evaluating evidence from multiple appropriate sources to assess the credibility, accuracy, cost-effectiveness, and methods used.</p>	
<p>7.4.C Research and explore resources such as museums, libraries, professional organizations, private companies, online platforms, and mentors employed in a science, technology, engineering, and mathematics (STEM) field to investigate STEM careers.</p>	
<p>(5) Recurring themes and concepts. The student understands that recurring themes and concepts provide a framework for making connections across disciplines. The student is expected to:</p>	
<p>7.5.A Identify and apply patterns to understand and connect scientific phenomena or to design solutions.</p>	
<p>7.5.B Identify and investigate cause-and-effect relationships to explain scientific phenomena or analyze problems.</p>	
<p>7.5.C Analyze how differences in scale, proportion, or quantity affect a system's structure or performance.</p>	
<p>7.5.D Examine and model the parts of a system and their interdependence in the function of the system.</p>	
<p>7.5.E Analyze and explain how energy flows and matter cycles through systems and how energy and matter are conserved through a variety of systems.</p>	
<p>7.5.F Analyze and explain the complementary relationship between structure and function of objects, organisms, and systems.</p>	
<p>7.5.G Analyze and explain how factors or conditions impact stability and change in objects, organisms, and systems.</p>	
<p>8th Grade</p>	
<p>(1) Scientific and engineering practices. The student, for at least 40% of instructional time, 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:</p>	
<p>8.1.A Ask questions and define problems based on observations or information from text, phenomena, models, or investigations.</p>	
<p>8.1.B Use scientific practices to plan and conduct descriptive, comparative, and experimental investigations and use engineering practices to design solutions to problems.</p>	
<p>8.1.C Use appropriate safety equipment and practices during laboratory, classroom, and field investigations as outlined in Texas Education Agency-approved safety standards.</p>	
<p>8.1.D Use appropriate tools such as graduated cylinders, metric rulers, periodic tables, balances, scales, thermometers, temperature probes, laboratory ware, timing devices, pH indicators, hot plates, models, microscopes, slides, life science models, petri dishes, dissecting kits, magnets, spring scales or force sensors, tools that model wave behavior, satellite images, weather maps, hand lenses, and lab notebooks or journals.</p>	
<p>8.1.E Collect quantitative data using the International System of Units (SI) and qualitative data as evidence.</p>	
<p>8.1.F Construct appropriate tables, graphs, maps, and charts using repeated trials and means to organize data.</p>	
<p>8.1.G Develop and use models to represent phenomena, systems, processes, or solutions to engineering problems.</p>	
<p>8.1.H Distinguish between scientific hypotheses, theories, and laws.</p>	
<p>(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:</p>	
<p>8.2.A Identify advantages and limitations of models such as their size, scale, properties, and materials.</p>	
<p>8.2.B Analyze data by identifying any significant descriptive statistical features, patterns, sources of error, or limitations.</p>	

8.2.C Use mathematical calculations to assess quantitative relationships in data.		
8.2.D Evaluate experimental and engineering designs.		
(3) Scientific and engineering practices. The student develops evidence-based explanations and communicates findings, conclusions, and proposed solutions. The student is expected to:		
8.3.A Develop explanations and propose solutions supported by data and models and consistent with scientific ideas, principles, and theories.		
8.3.B Communicate explanations and solutions individually and collaboratively in a variety of settings and formats.		
8.3.C Engage respectfully in scientific argumentation using applied scientific explanations and empirical evidence.		
(4) Scientific and engineering practices. The student knows the contributions of scientists and recognizes the importance of scientific research and innovation on society. The student is expected to:		
8.4.A Relate the impact of past and current research on scientific thought and society, including the process of science, cost-benefit analysis, and contributions of diverse scientists as related to the content.		
8.4.B Make informed decisions by evaluating evidence from multiple appropriate sources to assess the credibility, accuracy, cost-effectiveness, and methods used.		
8.4.C Research and explore resources such as museums, libraries, professional organizations, private companies, online platforms, and mentors employed in a science, technology, engineering, and mathematics (STEM) field to investigate STEM careers.		
(5) Recurring themes and concepts. The student understands that recurring themes and concepts provide a framework for making connections across disciplines. The student is expected to:		
8.5.A Identify and apply patterns to understand and connect scientific phenomena or to design solutions.		
8.5.B Identify and investigate cause-and-effect relationships to explain scientific phenomena or analyze problems.		
8.5.C Analyze how differences in scale, proportion, or quantity affect a system's structure or performance.		
8.5.D Examine and model the parts of a system and their interdependence in the function of the system.		
8.5.E Analyze and explain how energy flows and matter cycles through systems and how energy and matter are conserved through a variety of systems.		
8.5.F Analyze and explain the complementary relationship between the structure and function of objects, organisms, and systems.		
8.5.G Analyze and explain how factors or conditions impact stability and change in objects, organisms, and systems.		
n2y Instructional Targets	n2y Middle School Grade Band Units	n2y Supporting Activities
<ul style="list-style-type: none"> Identify questions that can be asked about the natural environment. Conduct simple scientific investigations. Use tools to gather data and information. Analyze and interpret data. Communicate procedures and explanations about an investigation. 	Unique	Unique
	Middle School Science Fair (Unit 22)	n2y Library/Science Books ULS Science and Social Studies Courses
	Unique Monthly Lessons	News2you
	Lesson 28: Science Experiment	Worksheets: Science Experiment
n2y Differentiated Tasks		
Level 3	Level 2	Level 1
<ul style="list-style-type: none"> Students will follow steps of a scientific process related to grades 6–8 science topics. 	<ul style="list-style-type: none"> With support, students will follow steps of a scientific process related to grades 6–8 science topics. 	<ul style="list-style-type: none"> Students will actively participate in a scientific process related to grades 6–8 science topics.

Standards for Earth and Space Science (Environmental Science)		Grades 9–12
Texas Essential Knowledge and Skills for Science (TEKS)	STAAR Alternate 2 Science Essence Statements	
<p>(5) Science concepts. The student understands the formation of the Earth and how objects in the solar system affect Earth's systems. The student is expected to:</p> <p>ESS.5.A Analyze how gravitational condensation of solar nebular gas and dust can lead to the accretion of planetesimals and protoplanets.</p> <p>ESS.5.B Identify comets, asteroids, meteoroids, and planets in the solar system and describe how they affect the Earth and Earth's systems.</p> <p>ESS.5.C Explore the historical and current hypotheses for the origin of the Moon, including the collision of Earth with a Mars-sized planetesimal.</p>	<p><i>Earth and Space Science is not addressed in the STAAR Alternate 2 Essence Statements for this grade band, however, ULS provides these instructional targets for practice.</i></p>	
<p>(6) Science concepts. The student knows the evidence for the formation and composition of Earth's atmosphere, hydrosphere, biosphere, and geosphere. The student is expected to:</p> <p>ESS.6.A Describe how impact accretion, gravitational compression, radioactive decay, and cooling differentiated proto-Earth into layers.</p> <p>ESS.6.B Evaluate the roles of volcanic outgassing and water-bearing comets in developing Earth's atmosphere and hydrosphere.</p> <p>ESS.6.C Evaluate the evidence for changes to the chemical composition of Earth's atmosphere prior to the introduction of oxygen.</p> <p>ESS.6.D Evaluate scientific hypotheses for the origin of life through abiotic chemical processes.</p> <p>ESS.6.E Describe how the production of oxygen by photosynthesis affected the development of the atmosphere, hydrosphere, geosphere, and biosphere.</p>		
<p>(7) Science concepts. The student knows that rocks and fossils provide evidence for geologic chronology, biological evolution, and environmental changes. The student is expected to:</p> <p>ESS.7.A Describe the development of multiple radiometric dating methods and analyze their precision, reliability, and limitations in calculating the ages of igneous rocks from Earth, the Moon, and meteorites.</p> <p>ESS.7.B Apply relative dating methods, principles of stratigraphy, and index fossils to determine the chronological order of rock layers.</p> <p>ESS.7.C Construct a model of the geological time scale using relative and absolute dating methods to represent Earth's approximate 4.6-billion-year history.</p> <p>ESS.7.D Explain how sedimentation, fossilization, and speciation affect the degree of completeness of the fossil record.</p> <p>ESS.7.E Describe how evidence of biozones and faunal succession in rock layers reveal information about the environment at the time those rocks were deposited and the dynamic nature of the Earth.</p> <p>ESS.7.F Analyze data from rock and fossil succession to evaluate the evidence for and significance of mass extinctions, major climatic changes, and tectonic events.</p>		
<p>(8) Science concepts. The student knows how the Earth's interior dynamics and energy flow drive geological processes on Earth's surface. The student is expected to:</p> <p>ESS.8.A Evaluate heat transfer through Earth's systems by convection and conduction and include its role in plate tectonics and volcanism.</p> <p>ESS.8.B Develop a model of the physical, mechanical, and chemical composition of Earth's layers using evidence from Earth's magnetic field, the composition of meteorites, and seismic waves.</p> <p>ESS.8.C Investigate how new conceptual interpretations of data and innovative geophysical technologies led to the current theory of plate tectonics.</p> <p>ESS.8.D Describe how heat and rock composition affect density within Earth's interior and how density influences the development and motion of Earth's tectonic plates.</p> <p>ESS.8.E Explain how plate tectonics accounts for geologic processes, including sea floor spreading and subduction, and features, including ocean ridges, rift valleys, earthquakes, volcanoes, mountain ranges, hot spots, and hydrothermal vents.</p>		

ESS.8.F Calculate the motion history of tectonic plates using equations relating rate, time, and distance to predict future motions, locations, and resulting geologic features.	
ESS.8.G Distinguish the location, type, and relative motion of convergent, divergent, and transform plate boundaries using evidence from the distribution of earthquakes and volcanoes.	
ESS.8.H Evaluate the role of plate tectonics with respect to long-term global changes in Earth's subsystems such as continental buildup, glaciation, sea level fluctuations, mass extinctions, and climate change.	
(9) Science concepts. The student knows that the lithosphere continuously changes as a result of dynamic and complex interactions among Earth's systems. The student is expected to:	
ESS.9.A Interpret Earth surface features using a variety of methods such as satellite imagery, aerial photography, and topographic and geologic maps using appropriate technologies.	
ESS.9.B Investigate and model how surface water and groundwater change the lithosphere through chemical and physical weathering and how they serve as valuable natural resources.	
ESS.9.C Model the processes of mass wasting, erosion, and deposition by water, wind, ice, glaciation, gravity, and volcanism in constantly reshaping Earth's surface.	
ESS.9.D Evaluate how weather and human activity affect the location, quality, and supply of available freshwater resources.	
(10) Science concepts. The student knows how the physical and chemical properties of the ocean affect its structure and flow of energy. The student is expected to:	
ESS.10.A Describe how the composition and structure of the oceans leads to thermohaline circulation and its periodicity.	
ESS.10.B Model and explain how changes to the composition, structure, and circulation of deep oceans affect thermohaline circulation using data on energy flow, ocean basin structure, and changes in polar ice caps and glaciers.	
ESS.10.C Analyze how global surface ocean circulation is the result of wind, tides, the Coriolis effect, water density differences, and the shape of the ocean basins.	
(11) Science concepts. The student knows that dynamic and complex interactions among Earth's systems produce climate and weather. The student is expected to:	
ESS.11.A Analyze how energy transfer through Milankovitch cycles, albedo, and differences in atmospheric and surface absorption are mechanisms of climate.	
ESS.11.B Describe how Earth's atmosphere is chemically and thermally stratified and how solar radiation interacts with the layers to cause the ozone layer, the jet stream, Hadley and Ferrel cells, and other atmospheric phenomena.	
ESS.11.C Model how greenhouse gasses trap thermal energy near Earth's surface.	
ESS.11.D Evaluate how the combination of multiple feedback loops alter global climate.	
ESS.11.E Investigate and analyze evidence for climate changes over Earth's history using paleoclimate data, historical records, and measured greenhouse gas levels.	
ESS.11.F Explain how the transfer of thermal energy among the hydrosphere, lithosphere, and atmosphere influences weather.	
ESS.11.G Describe how changing surface-ocean conditions, including El Niño-Southern Oscillation, affect global weather and climate patterns.	
(12) Science concepts. The student understands how Earth's systems affect and are affected by human activities, including resource use and management. The student is expected to:	
ESS.12.A Evaluate the impact on humans of natural changes in Earth's systems such as earthquakes, tsunamis, and volcanic eruptions.	
ESS.12.B Analyze the impact on humans of naturally occurring extreme weather events such as flooding, hurricanes, tornadoes, and thunderstorms.	

ESS.12.C Analyze the natural and anthropogenic factors that affect the severity and frequency of extreme weather events and the hazards associated with these events.	
ESS.12.D Analyze recent global ocean temperature data to predict the consequences of changing ocean temperature on evaporation, sea level, algal growth, coral bleaching, and biodiversity.	
ESS.12.E Predict how human use of Texas's naturally occurring resources such as fossil fuels, minerals, soil, solar energy, and wind energy directly and indirectly changes the cycling of matter and energy through Earth's systems.	
ESS.12.F Explain the cycling of carbon through different forms among Earth's systems and how biological processes have caused major changes to the carbon cycle in those systems over Earth's history.	
(13) Science concepts. The student explores global policies and careers related to the life cycles of Earth's resources. The student is expected to:	
ESS.13.A Analyze the policies related to resources from discovery to disposal, including economics, health, technological advances, resource type, concentration and location, waste disposal and recycling, mitigation efforts, and environmental impacts.	
ESS.13.B Explore global and Texas-based careers that involve the exploration, extraction, production, use, disposal, regulation, and protection of Earth's resources.	
Environmental Systems	
(5) Science concepts. The student knows the relationships of biotic and abiotic factors within habitats, ecosystems, and biomes. The student is expected to:	
ES.5.A Identify native plants and animals within a local ecosystem and compare their roles to those of plants and animals in other biomes, including aquatic, grassland, forest, desert, and tundra.	
ES.5.B Explain the cycling of water, phosphorus, carbon, silicon, and nitrogen through ecosystems, including sinks, and the human interactions that alter these cycles using tools such as models.	
ES.5.C Evaluate the effects of fluctuations in abiotic factors on local ecosystems and local biomes.	
ES.5.D Measure the concentration of dissolved substances such as dissolved oxygen, chlorides, and nitrates and describe their impacts on an ecosystem.	
ES.5.E Use models to predict how the introduction of an invasive species may alter the food chain and affect existing populations in an ecosystem.	
ES.5.F Use models to predict how species extinction may alter the food chain and affect existing populations in an ecosystem.	
ES.5.G Predict changes that may occur in an ecosystem if genetic diversity is increased or decreased.	
(6) Science concepts. The student knows the interrelationships among the resources within the local environmental system. The student is expected to:	
ES.6.A Compare and contrast land use and management methods and how they affect land attributes such as fertility, productivity, economic value, and ecological stability.	
ES.6.B Relate how water sources, management, and conservation affect water uses and quality.	
ES.6.C Document the use and conservation of both renewable and non-renewable resources as they pertain to sustainability.	
ES.6.D Identify how changes in limiting resources such as water, food, and energy affect local ecosystems.	
ES.6.E Analyze and evaluate the economic significance and interdependence of resources within the local environmental system.	
ES.6.F Evaluate the impact of waste management methods such as reduction, reuse, recycling, upcycling, and composting on resource availability in the local environment.	
(7) Science concepts. The student knows the sources and flow of energy through an environmental system. The student is expected to:	
ES.7.A Describe the interactions between the components of the geosphere, hydrosphere, cryosphere, atmosphere, and biosphere.	

ES.7.B Relate biogeochemical cycles to the flow of energy in ecosystems, including energy sinks such as oil, natural gas, and coal deposits.	
ES.7.C Explain the flow of heat energy in an ecosystem, including conduction, convection, and radiation.	
ES.7.D Identify and describe how energy is used, transformed, and conserved as it flows through ecosystems.	
(8) Science concepts. The student knows the relationship between carrying capacity and changes in populations and ecosystems. The student is expected to:	
ES.8.A Compare exponential and logistic population growth using graphical representations.	
ES.8.B Identify factors that may alter carrying capacity such as disease; natural disaster; available food, water, and livable space; habitat fragmentation; and periodic changes in weather.	
ES.8.C Calculate changes in population size in ecosystems.	
ES.8.D Analyze and make predictions about the impact on populations of geographic locales due to diseases, birth and death rates, urbanization, and natural events such as migration and seasonal changes.	
(9) Science concepts. The student knows that environments change naturally. The student is expected to:	
ES.9.A Analyze and describe how natural events such as tectonic movement, volcanic events, fires, tornadoes, hurricanes, flooding, and tsunamis affect natural populations.	
ES.9.B Explain how regional changes in the environment may have global effects.	
ES.9.C Examine how natural processes such as succession and feedback loops can restore habitats and ecosystems.	
ES.9.D Describe how temperature inversions have short-term and long-term effects, including El Niño and La Niña oscillations, ice cap and glacial melting, and changes in ocean surface temperatures.	
ES.9.E Analyze the impact of natural global climate change on ice caps, glaciers, ocean currents, and surface temperatures.	
(10) Science concepts. The student knows how humans impact environmental systems through emissions and pollutants. The student is expected to:	
ES.10.A Identify sources of emissions in air, soil, and water, including point and nonpoint sources.	
ES.10.B Distinguish how an emission becomes a pollutant based on its concentration, toxicity, reactivity, and location within the environment.	
ES.10.C Investigate the effects of pollutants such as chlorofluorocarbons, greenhouse gasses, pesticide runoff, nuclear waste, aerosols, metallic ions, and heavy metals, as well as thermal, light, and noise pollution.	
ES.10.D Evaluate indicators of air, soil, and water quality against regulatory standards to determine the health of an ecosystem.	
ES.10.E Distinguish between the causes and effects of global warming and ozone depletion, including the causes, the chemicals involved, the atmospheric layer, the environmental effects, the human health effects, and the relevant wavelengths on the electromagnetic spectrum (IR and UV).	
(11) Science concepts. The student understands how individual and collective actions impact environmental systems. The student is expected to:	
ES.11.A Evaluate the negative effects of human activities on the environment, including overhunting, overfishing, ecotourism, all-terrain vehicles, and personal watercraft.	
ES.11.B Evaluate the positive effects of human activities on the environment, including habitat restoration projects, species preservation efforts, nature conservancy groups, game and wildlife management, and ecotourism.	
ES.11.C Research the advantages and disadvantages of "going green" such as organic gardening and farming, natural methods of pest control, hydroponics, xeriscaping, energy-efficient homes and appliances, and hybrid cars.	
(12) Science concepts. The student understands how ethics and economic priorities influence environmental decisions. The student is expected to:	

ES.12.A Evaluate cost-benefit trade-offs of commercial activities such as municipal development, food production, deforestation, over-harvesting, mining, and use of renewable and non-renewable energy sources.		
ES.12.B Evaluate the economic impacts of individual actions on the environment such as overbuilding, habitat destruction, poaching, and improper waste disposal.		
ES.12.C Analyze how ethical beliefs influence environmental scientific and engineering practices such as methods for food production, water distribution, energy production, and the extraction of minerals.		
ES.12.D Discuss the impact of research and technology on social ethics and legal practices in situations such as the design of new buildings, recycling, or emission standards.		
ES.12.E Argue from evidence whether or not a healthy economy and a healthy environment are mutually exclusive.		
(13) Science concepts. The student knows how legislation mediates human impacts on the environment. The student is expected to:		
ES.13.A Describe past and present state and national legislation, including Texas automobile emissions regulations, the National Park Service Act, the Clean Air Act, the Clean Water Act, the Soil and Water Resources Conservation Act, and the Endangered Species Act.		
ES.13.B Evaluate the goals and effectiveness of past and present international agreements such as the environmental Antarctic Treaty System, the Montreal Protocol, the Kyoto Protocol, and the Paris Climate Accord.		
n2y Instructional Targets	n2y High School Grade Band Units	n2y Supporting Activities
Environmental Science <ul style="list-style-type: none"> Explore the relationship and motion of the solar system. Investigate the impact of geological events on Earth's surface (earthquakes, hurricanes, fires, etc.). Identify Earth's layers. Identify types, causes and consequences of land, water and air pollution. Explore scientific ways to measure, predict and report weather conditions. Identify and describe ways that humans have changed the environment (deforestation, waste management, etc.). Participate in ways to reduce, reuse and recycle in order to save resources. Identify and describe benefits of alternative energy. 	Unique <ul style="list-style-type: none"> Studying Weather (Unit 7) Our Changing Earth (Unit 19) Around the Solar System (Unit 23) 	Unique <ul style="list-style-type: none"> n2y Library/Science Books Core Materials: Weather Report ULS Science and Social Studies Courses Standards Connection

n2y Differentiated Tasks		
Level 3	Level 2	Level 1
<ul style="list-style-type: none"> Students will describe the motion of planets in the solar system. Students will identify and describe geological events (tornado, hurricane, flood, etc.) and the effects of those events on the environment and human life. Students will describe each layer of the Earth. Students will describe causes of pollution and the effects of pollution on air, water and land. Students will identify tools and methods that scientists use to measure and predict weather. Students will describe changes in the environment caused by humans (reforestation and replanting of trees). Students will identify ways to reduce, reuse and recycle resources. Students will identify sources of alternative energy and the benefits to the environment of using those resources. 	<ul style="list-style-type: none"> Students will identify Earth, the Sun and the Moon within the solar system. Students will identify the effects of geological events on the environment and human life with support. Students will identify that Earth is made of 3 major layers (crust, mantle, core). Students will identify ways to help prevent air, water or land pollution. Students will apply weather report information to daily activities. Students will identify changes in the environment caused by humans (water quality, air quality, waste management). Students will sort recyclable goods into corresponding bins. Students will identify sources of alternative energy. 	<ul style="list-style-type: none"> Students will identify Earth. Students will identify common types of geological events in the local area. Students will identify the Earth's crust as the layer we live on. Students will actively participate in a project to clean up local land areas. Students will identify weather conditions and temperatures related to the day or season. Students select the result of an environmental change caused by humans (pollution, flood, replanting of trees etc.). Students will actively participate in the recycling of objects. Students will identify a common source of alternative energy.

Standards for Life Science (Biology)		Grades 9–12
Texas Essential Knowledge and Skills for Science (TEKS)	STAAR Alternate 2 Science Essence Statements	
(5) Science concepts--biological structures, functions, and processes. The student knows that biological structures at multiple levels of organization perform specific functions and processes that affect life. The student is expected to: Biology.5.A Relate the functions of different types of biomolecules, including carbohydrates, lipids, proteins, and nucleic acids, to the structure and function of a cell.	Biology (4) Science concepts. The student knows that all cells are basic structures of all living things with specialized parts that perform specific functions and that viruses are different from cells. (Readiness and Supporting Standard) Essence Statement Knows that all living things are composed of cells that perform specific functions and that viruses are different from cells.	
Biology.5.B Compare and contrast prokaryotic and eukaryotic cells, including their complexity, and compare and contrast scientific explanations for cellular complexity.		
Biology.5.C Investigate homeostasis through the cellular transport of molecules.		
Biology.5.D Compare the structures of viruses to cells and explain how viruses spread and cause disease.		
(6) Science concepts--biological structures, functions, and processes. The student knows how an organism grows and the importance of cell differentiation. The student is expected to: Biology.6.A Explain the importance of the cell cycle to the growth of organisms, including an overview of the stages of the cell cycle and deoxyribonucleic acid (DNA) replication models.	Biology (5) Science concepts. The student knows how an organism grows and the importance of cell differentiation. (Readiness and Supporting Standard) Essence Statement Recognizes the importance of the cell cycle and cell differentiation to the growth of organisms.	
Biology.6.B Explain the process of cell specialization through cell differentiation, including the role of environmental factors.		
Biology.6.C Relate disruptions of the cell cycle to how they lead to the development of diseases such as cancer.		
(7) Science concepts--mechanisms of genetics. The student knows the role of nucleic acids in gene expression. The student is expected to: Biology.7.A Identify components of DNA, explain how the nucleotide sequence specifies some traits of an organism, and examine scientific explanations for the origin of DNA.	Biology (6) Science concepts. The student knows the mechanisms of genetics such as the role of nucleic acids and the principles of Mendelian and non-Mendelian genetics. (Readiness and Supporting Standard) Essence Statement Recognizes that the structure of DNA determines the inherited traits in organisms.	
Biology.7.B Describe the significance of gene expression and explain the process of protein synthesis using models of DNA and ribonucleic acid (RNA).		
Biology.7.C Identify and illustrate changes in DNA and evaluate the significance of these changes.		
Biology.7.D Discuss the importance of molecular technologies such as polymerase chain reaction (PCR), gel electrophoresis, and genetic engineering that are applicable in current research and engineering practices.		
(8) Science concepts--mechanisms of genetics. The student knows the role of nucleic acids and the principles of inheritance and variation of traits in Mendelian and non-Mendelian genetics. The student is expected to: Biology.8.A Analyze the significance of chromosome reduction, independent assortment, and crossing-over during meiosis in increasing diversity in populations of organisms that reproduce sexually.		
Biology.8.B Predict possible outcomes of various genetic combinations using monohybrid and dihybrid crosses, including non-Mendelian traits of incomplete dominance, codominance, sex-linked traits, and multiple alleles.		
(9) Science concepts--biological evolution. The student knows evolutionary theory is a scientific explanation for the unity and diversity of life that has multiple lines of evidence. The student is expected to: Biology.9.A Analyze and evaluate how evidence of common ancestry among groups is provided by the fossil record, biogeography, and homologies, including anatomical, molecular, and developmental.	Biology (7) Science concepts. The student knows evolutionary theory is a scientific explanation for the unity and diversity of life. (Readiness and Supporting Standard) Essence Statement Knows evolutionary theory is a scientific explanation for the unity and diversity of life.	
Biology.9.B Examine scientific explanations for varying rates of change such as gradualism, abrupt appearance, and stasis in the fossil record.		
(10) Science concepts--biological evolution. The student knows evolutionary theory is a scientific explanation for the unity and diversity of life that has multiple mechanisms. The student is expected to: Biology.10.A Analyze and evaluate how natural selection produces change in populations and not in individuals.		

Biology.10.B Analyze and evaluate how the elements of natural selection, including inherited variation, the potential of a population to produce more offspring than can survive, and a finite supply of environmental resources, result in differential reproductive success.		
Biology.10.C Analyze and evaluate how natural selection may lead to speciation.		
Biology.10.D Analyze evolutionary mechanisms other than natural selection, including genetic drift, gene flow, mutation, and genetic recombination, and their effect on the gene pool of a population.		
(11) Science concepts--biological structures, functions, and processes. The student knows the significance of matter cycling, energy flow, and enzymes in living organisms. The student is expected to: Biology.11.A Explain how matter is conserved and energy is transferred during photosynthesis and cellular respiration using models, including the chemical equations for these processes.		Biology (11) Science concepts. The student knows that biological systems work to achieve and maintain balance. (Readiness and Supporting Standard) Essence Statement Knows that biological systems work to achieve and maintain balance.
Biology.11.B Investigate and explain the role of enzymes in facilitating cellular processes.		
(12) Science concepts--biological structures, functions, and processes. The student knows that multicellular organisms are composed of multiple systems that interact to perform complex functions. The student is expected to: Biology.12.A Analyze the interactions that occur among systems that perform the functions of regulation, nutrient absorption, reproduction, and defense from injury or illness in animals.		
Biology.12.B Explain how the interactions that occur among systems that perform functions of transport, reproduction, and response in plants are facilitated by their structures.		
(13) Science concepts--interdependence within environmental systems. The student knows that interactions at various levels of organization occur within an ecosystem to maintain stability. The student is expected to: Biology.13.A Investigate and evaluate how ecological relationships, including predation, parasitism, commensalism, mutualism, and competition, influence ecosystem stability.		Biology (12) Science concepts. The student knows that interdependence and interactions occur within an environmental system. (Readiness and Supporting Standard) Essence Statement Knows that interdependence and interactions occur within an environmental system. Biology (10) Science concepts. The student knows that biological systems are composed of multiple levels. (Readiness and Supporting Standard) Essence Statement Knows that biological systems have functions and interact.
Biology.13.B Analyze how ecosystem stability is affected by disruptions to the cycling of matter and flow of energy through trophic levels using models.		
Biology.13.C Explain the significance of the carbon and nitrogen cycles to ecosystem stability and analyze the consequences of disrupting these cycles.		
Biology.13.D Explain how environmental change, including change due to human activity, affects biodiversity and analyze how changes in biodiversity impact ecosystem stability.		
n2y Instructional Targets	n2y High School Grade Band Units	n2y Supporting Activities
Biology <ul style="list-style-type: none">● Investigate basic body organs and systems and recognize the function of each.● Identify the basic process that plants use to make food (photosynthesis).● Recognize the diversity of organisms by sorting plants and animals according to their classification.● Recognize the interdependence of plants and animals and changes over time.● Identify how plants and animals adapt to their environment.● Explore how food provides energy to humans.● Explore DNA as the blueprint for traits passed from parent to offspring: characteristics, tendencies for certain diseases and so on.	Unique Healthy Hygiene, Healthy Me (Unit 5) Plant Life (Unit 9) Knowing Our Ecosystems (Unit 12) What Makes You, You? (Unit 29)	Unique n2y Library/Science Books ULS Science and Social Studies Courses Standards Connection

n2y Differentiated Tasks		
Level 3	Level 2	Level 1
<ul style="list-style-type: none"> Students will identify basic organs and systems of the human body with connections to functions (heart, respiratory system, etc.). Students will explain the basic process of photosynthesis describing how plants make their food. Students will classify plants and animals into major categories. Students will describe an ecosystem and the natural and human factors that may help or hurt the balance of nature. Students will describe how animals and plants survive in an environment. Students will describe the components of a balanced diet and the impact that diet can have. Students will describe the basic structure of a DNA code and the code's implications for inherited traits and tendencies. 	<ul style="list-style-type: none"> Students will identify basic organs of the body and explain how these work to sustain life (heart, lungs, stomach, brain, etc.). Students will understand that plants need sunlight to make their food. Students will identify various plants and animals as belonging to a specific classification or category. Students will identify plants and animals that share a biome and how these organisms meet one another's needs. Students will identify characteristics of plants and animals that aid in survival. Students will identify basic food groups that contribute to a balanced diet. Students will design a simple DNA chart that shows basic connections of inherited traits. 	<ul style="list-style-type: none"> Students will identify body parts or their functions. Students will identify parts of a plant. Students will sort plants and animals. Students will select plants and animals that belong to a specific biome. Students will select a characteristic of a plant or animal that aids in survival. Students will identify plants and animals that contribute to a healthful diet. Students will identify traits inherited from parents (eye color, hair color, etc.).

Standards for Physical Science (Physics and Chemistry)		Grades 9–12
Texas Essential Knowledge and Skills for Science (TEKS)		STAAR Alternate 2 Science Essence Statements
Physics		<i>Physical Science is not addressed in the STAAR Alternate 2 Essence Statements for this grade band, however, ULS provides these instructional targets for practice.</i>
(5) Science concepts. The student knows and applies the laws governing motion in a variety of situations. The student is expected to: Physics.5.A Analyze different types of motion by generating and interpreting position versus time, velocity versus time, and acceleration versus time using hand graphing and real-time technology such as motion detectors, photogates, or digital applications.		
Physics.5.B Define scalar and vector quantities related to one- and two-dimensional motion and combine vectors using both graphical vector addition and the Pythagorean theorem.		
Physics.5.C Describe and analyze motion in one dimension using equations with the concepts of distance, displacement, speed, velocity, frames of reference, and acceleration.		
Physics.5.D Describe and analyze acceleration in uniform circular and horizontal projectile motion in two dimensions using equations.		
Physics.5.E Explain and apply the concepts of equilibrium and inertia as represented by Newton's first law of motion using relevant real-world examples such as rockets, satellites, and automobile safety devices.		
Physics.5.F Calculate the effect of forces on objects, including tension, friction, normal, gravity, centripetal, and applied forces, using free body diagrams and the relationship between force and acceleration as represented by Newton's second law of motion.		
Physics.5.G Illustrate and analyze the simultaneous forces between two objects as represented in Newton's third law of motion using free body diagrams and in an experimental design scenario.		
Physics.5.H Describe and calculate, using scientific notation, how the magnitude of force between two objects depends on their masses and the distance between their centers, and predict the effects on objects in linear and orbiting systems using Newton's law of universal gravitation.		
(6) Science concepts. The student knows the nature of forces in the physical world. The student is expected to: Physics.6.A Use scientific notation and predict how the magnitude of the electric force between two objects depends on their charges and the distance between their centers using Coulomb's law.		
Physics.6.B Identify and describe examples of electric and magnetic forces and fields in everyday life such as generators, motors, and transformers.		
Physics.6.C Investigate and describe conservation of charge during the processes of induction, conduction, and polarization using different materials such as electroscopes, balloons, rods, fur, silk, and Van de Graaf generators.		
Physics.6.D Analyze, design, and construct series and parallel circuits using schematics and materials such as switches, wires, resistors, lightbulbs, batteries, voltmeters, and ammeters.		
Physics.6.E Calculate current through, potential difference across, resistance of, and power used by electric circuit elements connected in both series and parallel circuits using Ohm's law.		
(7) Science concepts. The student knows that changes occur within a physical system and applies the laws of conservation of energy and momentum. The student is expected to: Physics.7.A Calculate and explain work and power in one dimension and identify when work is and is not being done by or on a system.		
Physics.7.B Investigate and calculate mechanical, kinetic, and potential energy of a system.		
Physics.7.C Apply the concept of conservation of energy using the work-energy theorem, energy diagrams, and energy transformation equations, including transformations between kinetic, potential, and thermal energy.		
Physics.7.D Calculate and describe the impulse and momentum of objects in physical systems such as automobile safety features, athletics, and rockets.		
Physics.7.E Analyze the conservation of momentum qualitatively in inelastic and elastic collisions in one dimension using models, diagrams, and simulations..		

<p>(8) Science concepts. The student knows the characteristics and behavior of waves. The student is expected to: Physics.8.A Examine and describe simple harmonic motion such as masses on springs and pendulums and wave energy propagation in various types of media such as surface waves on a body of water and pulses in ropes. Physics.8.B Compare the characteristics of transverse and longitudinal waves, including electromagnetic and sound waves. Physics.8.C Investigate and analyze characteristics of waves, including velocity, frequency, amplitude, and wavelength, and calculate using the relationships between wave speed, frequency, and wavelength. Physics.8.D Investigate behaviors of waves, including reflection, refraction, diffraction, interference, standing wave, the Doppler effect and polarization and superposition. Physics.8.E Compare the different applications of the electromagnetic spectrum, including radio telescopes, microwaves, and x-rays. Physics.8.F Investigate the emission spectra produced by various atoms and explain the relationship to the electromagnetic spectrum. Physics.8.G Describe and predict image formation as a consequence of reflection from a plane mirror and refraction through a thin convex lens.</p>	
<p>(9) Science concepts. The student knows examples of quantum phenomena and their applications. The student is expected to: Physics.9.A Describe the photoelectric effect and emission spectra produced by various atoms and how both are explained by the photon model for light. Physics.9.B Investigate Malus's Law and describe examples of applications of wave polarization, including 3-D movie glasses and LCD computer screens. Physics.9.C Compare and explain how superposition of quantum states is related to the wave-particle duality nature of light. Physics.9.D Dive examples of applications of quantum phenomena, including the Heisenberg uncertainty principle, quantum computing, and cybersecurity.</p>	
Chemistry	
<p>(5) Science concepts. The student understands the development of the Periodic Table and applies its predictive power. The student is expected to: Chemistry.5.A Explain the development of the Periodic Table over time using evidence such as chemical and physical properties. Chemistry.5.B Predict the properties of elements in chemical families, including alkali metals, alkaline earth metals, halogens, noble gasses, and transition metals, based on valence electrons patterns using the Periodic Table. Chemistry.5.C Analyze and interpret elemental data, including atomic radius, atomic mass, electronegativity, ionization energy, and reactivity to identify periodic trends.</p>	
<p>(6) Science concepts. The student understands the development of atomic theory and applies it to real-world phenomena. The student is expected to: Chemistry.6.A Construct models using Dalton's Postulates, Thomson's discovery of electron properties, Rutherford's nuclear atom, Bohr's nuclear atom, and Heisenberg's Uncertainty Principle to show the development of modern atomic theory over time. Chemistry.6.B Describe the structure of atoms and ions, including the masses, electrical charges, and locations of protons and neutrons in the nucleus and electrons in the electron cloud. Chemistry.6.C Investigate the mathematical relationship between energy, frequency, and wavelength of light using the electromagnetic spectrum and relate it to the quantization of energy in the emission spectrum. Chemistry.6.D Calculate average atomic mass of an element using isotopic composition. Chemistry.6.E Construct models to express the arrangement of electrons in atoms of representative elements using electron configurations and Lewis dot structures.</p>	

<p>(7) Science concepts. The student knows how atoms form ionic, covalent, and metallic bonds. The student is expected to:</p> <p>Chemistry.7.A Construct an argument to support how periodic trends such as electronegativity can predict bonding between elements.</p> <p>Chemistry.7.B Name and write the chemical formulas for ionic and covalent compounds using International Union of Pure and Applied Chemistry (IUPAC) nomenclature rules.</p> <p>Chemistry.7.C Classify and draw electron dot structures for molecules with linear, bent, trigonal planar, trigonal pyramidal, and tetrahedral molecular geometries as explained by Valence Shell Electron Pair Repulsion (VSEPR) theory.</p> <p>Chemistry.7.D Analyze the properties of ionic, covalent, and metallic substances in terms of intramolecular and intermolecular forces.</p>	
<p>(8) Science concepts. The student understands how matter is accounted for in chemical substances. The student is expected to:</p> <p>Chemistry.8.A Define mole and apply the concept of molar mass to convert between moles and grams.</p> <p>Chemistry.8.B Calculate the number of atoms or molecules in a sample of material using Avogadro's number.</p> <p>Chemistry.8.C Calculate percent composition of compounds.</p> <p>Chemistry.8.D Differentiate between empirical and molecular formulas.</p>	
<p>(9) Science concepts. The student understands how matter is accounted for in chemical reactions. The student is expected to:</p> <p>Chemistry.9.A Interpret, write, and balance chemical equations, including synthesis, decomposition, single replacement, double replacement, and combustion reactions using the law of conservation of mass.</p> <p>Chemistry.9.B Differentiate among acid-base reactions, precipitation reactions, and oxidation-reduction reactions.</p> <p>Chemistry.9.C Perform stoichiometric calculations, including determination of mass relationships, gas volume relationships, and percent yield.</p> <p>Chemistry.9.D Describe the concept of limiting reactants in a balanced chemical equation.</p>	
<p>(10) Science concepts. The student understands the principles of the kinetic molecular theory and ideal gas behavior. The student is expected to:</p> <p>Chemistry.10.A Describe the postulates of the kinetic molecular theory.</p> <p>Chemistry.10.B Describe and calculate the relationships among volume, pressure, number of moles, and temperature for an ideal gas.</p> <p>Chemistry.10.C Define and apply Dalton's law of partial pressure.</p>	
<p>(11) Science concepts. The student understands and can apply the factors that influence the behavior of solutions. The student is expected to:</p> <p>Chemistry.11.A Describe the unique role of water in solutions in terms of polarity.</p> <p>Chemistry.11.B Distinguish among types of solutions, including electrolytes and nonelectrolytes and unsaturated, saturated, and supersaturated solutions.</p> <p>Chemistry.11.C Investigate how solid and gas solubilities are influenced by temperature using solubility curves and how rates of dissolution are influenced by temperature, agitation, and surface area.</p> <p>Chemistry.11.D Investigate the general rules regarding solubility and predict the solubility of the products of a double replacement reaction.</p> <p>Chemistry.11.E Calculate the concentration of solutions in units of molarity.</p> <p>Chemistry.11.F Calculate the dilutions of solutions using molarity.</p>	
<p>(12) Science concepts. The student understands and applies various rules regarding acids and bases. The student is expected to:</p> <p>Chemistry.12.A Name and write the chemical formulas for acids and bases using IUPAC nomenclature rules.</p> <p>Chemistry.12.B Define acids and bases and distinguish between Arrhenius and Bronsted-Lowry definitions.</p> <p>Chemistry.12.C Differentiate between strong and weak acids and bases.</p> <p>Chemistry.12.D Predict products in acid-base reactions that form water.</p>	

Chemistry.12.E Define pH and calculate the pH of a solution using the hydrogen ion concentration.		
(13) Science concepts. The student understands the energy changes that occur in chemical reactions. The student is expected to:		
Chemistry.13.A Explain everyday examples that illustrate the four laws of thermodynamics.		
Chemistry.13.B Investigate the process of heat transfer using calorimetry.		
Chemistry.13.C Classify processes as exothermic or endothermic and represent energy changes that occur in chemical reactions using thermochemical equations or graphical analysis.		
Chemistry.13.D Perform calculations involving heat, mass, temperature change, and specific heat.		
(14) Science concepts. The student understands the basic processes of nuclear chemistry. The student is expected to:		
Chemistry.14.A Describe the characteristics of alpha, beta, and gamma radioactive decay processes in terms of balanced nuclear equations.		
Chemistry.14.B Compare fission and fusion reactions.		
Chemistry.14.C Give examples of applications of nuclear phenomena such as nuclear stability, radiation therapy, diagnostic imaging, solar cells, and nuclear power.		
n2y Instructional Targets	n2y High School Grade Band Units	n2y Supporting Activities
Physical Science <ul style="list-style-type: none"> Identify and investigate entries in the Periodic Table of Elements in relation to real-world product uses (gold in jewelry, aluminum in foil wrap, etc.). Recognize and investigate real-world examples of physical and chemical changes to matter. Identify and investigate objects in motion in terms of distance, speed, position, acceleration and time. Describe and investigate examples of energy and energy transfers in daily life (light bulb, car engine, sound in a radio, etc.). Investigate the effects of change in frequency, wavelength or speed on light and sound. Describe how technologies use waves in everyday life. Identify technologies in everyday life that meet human needs. 	Unique <ul style="list-style-type: none"> Fast and Slow, Objects Go (Unit 2) What's the Matter? (Unit 15) Energy is Everywhere (Unit 17) Changes to Light and Sound (Unit 27) 	Unique <ul style="list-style-type: none"> n2y Library/Science Books ULS Science and Social Studies Courses Standards Connection

n2y Differentiated Tasks		
Level 3	Level 2	Level 1
<ul style="list-style-type: none"> Students will identify common metal and nonmetal elements with typical uses for these elements. Students will describe changes in matter within real-world situations, including physical changes (size, shape, state, or appearance) and chemical changes (transformation to a different kind of matter). Students will describe the motion of an object. Students will explore, identify and describe the variety of ways that energy impacts daily life. Students will describe changes in light or sound when frequency, wavelength or speed is altered. Students will describe how technology (computers, smartphones) use waves to transmit and capture information. 	<ul style="list-style-type: none"> Students will identify objects made of metal and each object's use (pan for cooking, folding chair for sitting, etc.). Students will identify the cause of a chemical or physical change in a state of matter (water freezing into ice cubes, paper being cut into shapes, baking a cake etc.). Students will identify the motion of an object (speed, path and pattern). Students will identify energy sources and describe their use in daily life. Students will identify changes in light or sound. Students will identify technology and the information it sends and receives through waves. 	<ul style="list-style-type: none"> Students will identify common objects made of metal. Students will identify states of matter before and after changes in that matter. Students will identify the motion of an object as being fast or slow. Students will demonstrate the proper use of an energy source (turning on the radio, using a solar powered calculator, etc.). Students will actively participate in activities that result in a change to sound or light. Students will identify common technology that uses waves to transmit and capture information (smart phone, computer, etc.).

Standards for Scientific Inquiry		Grades 9–12
Texas Essential Knowledge and Skills for Science (TEKS)	STAAR Alternate 2 Science Essence Statements	
Scientific and Engineering Practices		
(1) Scientific and engineering practices. The student, for at least 40% of instructional time, asks questions, identifies problems, and plans and safely conducts classroom, laboratory, and field investigations to explain phenomena or design solutions using appropriate tools and models. The student is expected to:		<i>Scientific Inquiry is not addressed in the STAAR Alternate 2 Essence Statements for this grade band, however, ULS provides these instructional targets for practice.</i>
SEP.1.A Ask questions and define problems based on observations or information from text, phenomena, models, or investigations.		
SEP.1.B Apply scientific practices to plan and conduct descriptive, comparative, and experimental investigations and use engineering practices to design solutions to problems.		
SEP.1.C Use appropriate safety equipment and practices during laboratory, classroom, and field investigations as outlined in Texas Education Agency-approved safety standards.		
SEP.1.D Use appropriate tools such as a drawing compass, magnetic compass, bar magnets, topographical and geological maps, satellite imagery and other remote sensing data, Geographic Information Systems (GIS), Global Positioning System (GPS), hand lenses, and fossil and rock sample kits.		
SEP.1.E Collect quantitative data using the International System of Units (SI) and qualitative data as evidence.		
SEP.1.F Organize quantitative and qualitative data using scatter plots, line graphs, bar graphs, charts, data tables, digital tools, diagrams, scientific drawings, and student-prepared models.		
SEP.1.G Develop and use models to represent phenomena, systems, processes, or solutions to engineering problems.		
SEP.1.H Distinguish between scientific hypotheses, theories, and laws.		
(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:		
SEP.2.A Identify advantages and limitations of models such as their size, scale, properties, and materials.		
SEP.2.B Analyze data by identifying significant statistical features, patterns, sources of error, and limitations.		
SEP.2.C Use mathematical calculations to assess quantitative relationships in data.		
SEP.2.D Evaluate experimental and engineering designs.		
(3) Scientific and engineering practices. The student develops evidence-based explanations and communicates findings, conclusions, and proposed solutions. The student is expected to:		
SEP.3.A Develop explanations and propose solutions supported by data and models consistent with scientific ideas, principles, and theories.		
SEP.3.B Communicate explanations and solutions individually and collaboratively in a variety of settings and formats.		
SEP.3.C Engage respectfully in scientific argumentation using applied scientific explanations and empirical evidence.		
(4) Scientific and engineering practices. The student knows the contributions of scientists and recognizes the importance of scientific research and innovation on society. The student is expected to:		
SEP.4.A Analyze, evaluate, and critique scientific explanations and solutions by using empirical evidence, logical reasoning, and experimental and observational testing, so as to encourage critical thinking by the student.		
SEP.4.B Relate the impact of past and current research on scientific thought and society, including research methodology, cost-benefit analysis, and contributions of diverse scientists as related to the content.		
SEP.4.C Research and explore resources such as museums, planetariums, observatories, libraries, professional organizations, private companies, online platforms, and mentors employed in a science, technology, engineering, and mathematics (STEM) field in order to investigate STEM careers.		



n2y Instructional Targets	n2y High School Grade Band Units	n2y Supporting Activities
<ul style="list-style-type: none"> Identify questions to guide scientific investigations. Conduct simple scientific investigations. Use tools to gather data and information. Analyze and interpret data. Communicate and support findings. 	Unique	Unique
	High School Science Fair (Unit 22)	n2y Library/Science Books ULS Science and Social Studies Courses
	Unique Monthly Lessons	News2you
	Lesson 28: Science Experiment	Worksheet: Science Experiment
n2y Differentiated Tasks		
<i>Level 3</i>	<i>Level 2</i>	<i>Level 1</i>
<ul style="list-style-type: none"> Students will follow steps of a scientific process related to grades 9–12 science topics. 	<ul style="list-style-type: none"> With support, students will follow steps of a scientific process related to grades 9–12 science topics. 	<ul style="list-style-type: none"> Students will actively participate in a scientific process related to grades 9–12 science topics.