PLTW Launch Standards Guide

North Carolina Essential Standards K-5 Science

PLTW Launch (PreK-5) is designed to support your science learning needs. The modules are developed to ensure an unmatched experience, combining three-dimensional learning; unique, problem-based instructional approach; real-world applied learning; as well as Spanish language options – all in one program.

This Standards Guide shows how each PLTW Launch module supports the North Carolina Essential Standards K-5 Science. Because schools need the flexibility to implement the curriculum in the way that best meets their students' needs, PLTW Launch is designed to support a wide range of implementations. Whether the modules are offered in all classrooms, as a specials rotation, as grade level rotations, as an after-school program, or even as a summer learning implementation, PLTW Launch offers the flexibility to meet your needs.

The module charts below provide a single-grade, up or down shift in the grade level recommendations to support the range of school needs across the country.

Use this Standards Guide in combination with the Module Descriptions PDF as planning tools to explore how you can implement PLTW Launch as your elementary learning solution.

PLTW LAUNCH

Kindergarten

Topic	Essential Standard		Clarifying Objectives		PLTW Launch Modules
Forces and Motion	K.P.1	Understand the positions and motions of objects and organisms observed in the environment.	K.P.1.1	Compare the relative position of various objects observed in the classroom and outside using position words such as: in front of, behind, between, on top of, under, above, below and beside.	Objective not currently supported
			K.P.1.2	Give examples of different ways objects and organisms move (to include falling to the ground when dropped) straight, zigzag, round and round, back and forth, and fast and slow.	Pushes and Pulls (K)
Matter: Properties and Change	K.P.2	Understand how objects are described based on their physical properties and how they are used.	K.P.2.1	Classify objects by observable physical properties (including size, color, shape, texture, weight and flexibility).	Life Science: Living and Nonliving Things (PreK) Animal Adaptations (1)
			K.P.2.2	Compare the observable physical properties of different kinds of materials (clay, wood, cloth, paper, etc) from which objects are made and how they are used.	Objective not currently supported
Earth Systems, Structures and Processes	K.E.1	Understand change and observable patterns of weather that occur from day to day and throughout the year.	K.E.1.1	Infer that change is something that happens to many things in the environment based on observations made using one or more of their senses.	Living Things: Needs and Impacts (K)
			K.E.1.2	Summarize daily weather conditions noting changes that occur from day to day and throughout the year.	Sunlight and Weather (K)
			K.E.1.3	Compare weather patterns that occur from season to season.	Sunlight and Weather (K)
Structures and Functions of Living Organisms	K.L.1	Compare characteristics of animals that make them alike and different from other animals and nonliving things.	K.L.1.1	Compare different types of the same animal (i.e. different types of dogs, different types of cats, etc.) to determine individual differences within a particular type of animal.	Objective not currently supported
			K.L.1.2	Compare characteristics of living and nonliving things in terms of their structure, growth, changes, movement, and basic needs.	Living Things: Needs and Impacts (K) Living and Nonliving Things (PreK)

First Grade

Topic	Essential Standard		Clarifying Objectives		PLTW Launch Modules
Forces and Motion	1.P.1	Understand how forces (pushes or pulls) affect the motion of an object.	1.P.1.1	Explain the importance of a push or pull to changing the motion of an object.	Pushes and Pulls (K)
			1.P.1.2	Explain how some forces (pushes and pulls) can be used to make things move without touching them, such as magnets.	Objective not currently supported
			1.P.1.3	Predict the effect of a given force on the motion of an object, including balanced forces.	Pushes and Pulls (K)
Earth in the Universe	1.E.1	Recognize the features and patterns of the earth/moon/sun system as observed from Earth.	1.E.1.1	Recognize differences in the features of the day and night sky and apparent movement of objects across the sky as observed from Earth.	Light: Observing the Sun, Moon, and Stars (1)
			1.E.1.2	Recognize patterns of observable changes in the Moon's appearance from day to day.	Light: Observing the Sun, Moon, and Stars (1)
Earth Systems, Structures and Processes	1.E.2	Understand the physical properties of Earth materials that make them useful in different ways.	1.E.2.1	Summarize the physical properties of Earth materials, including rocks, minerals, soils and water that make them useful in different ways.	Objective not currently supported
			1.E.2.1	Compare the properties of soil samples from different places relating their capacity to retain water, nourish and support the growth of certain plants.	Objective not currently supported
Ecosystems	1.L.1	Understand characteristics of various environments and behaviors of humans that enable plants and animals to survive.	1.L.1.1	Recognize that plants and animals need air, water, light (plants only), space, food and shelter and that these may be found in their environment.	Living Things: Needs and Impacts (K)
			1.L.1.2	Give examples of how the needs of different plants and animals can be met by their environments in North Carolina or different places throughout the world.	Living Things: Needs and Impacts (K)
			1.L.1.3	Summarize ways that humans protect their environment and/or improve conditions for the growth of the plants and animals that live there (e.g., reuse or recycle products to avoid littering).	Living Things: Needs and Impacts (K)
Molecular Biology	1.L.2	Summarize the needs of living organisms for energy and growth.	1.L.2.1	Summarize the basic needs of a variety of different plants (including air, water, nutrients, and light) for energy and growth.	Living Things: Needs and Impacts (K)
			1.L.2.2	Summarize the basic needs of a variety of different animals (including air, water, and food) for energy and growth.	Living Things: Needs and Impacts (K) Living Things: Diversity of Life (2)

Second Grade

Topic	Essential Standard		Clarifying Objectives		PLTW Launch Modules
Forces and Motion	2.P.1	Understand the relationship between sound and vibrating objects.	2.P.1.1	Illustrate how sound is produced by vibrating objects and columns of air.	Light and Sound (1)
			2.P.1.2	Summarize the relationship between sound and objects of the body that vibrate – eardrum and vocal cords.	Light and Sound (1)
Matter: Properties and Change	2.P.2	Understand properties of solids and liquids and the changes they undergo.	2.P.2.1	Give examples of matter that change from a solid to a liquid and from a liquid to a solid by heating and cooling.	Materials Science: Properties of Matter (2)
			2.P.2.2	Compare the amount (volume and weight) of water in a container before and after freezing.	Objective not currently supported
			2.P.2.3	Compare what happens to water left in an open container over time as to water left in a closed container.	Objective not currently supported
Earth Systems, Structures and Processes	2.E.1	Understand patterns of weather and factors that affect weather.	2.E.1.1	Summarize how energy from the sun serves as a source of light that warms the land, air and water.	Objective not currently supported
			2.E.1.2	Summarize weather conditions using qualitative and quantitative measures to describe temperature, wind direction, wind speed and precipitation	Weather: Factors and Hazards (3)
			2.E.1.3	Compare weather patterns that occur over time and relate observable patterns to time of day and time of year.	Weather: Factors and Hazards (3)
			2.E.1.4	Recognize the tools that scientists use for observing, recording, and predicting weather changes from day to day and during the seasons.	Weather: Factors and Hazards (3)
Structures and Functions of Living Organisms	2.L.1	Understand animal life cycles.	2.L.1.1	Summarize the life cycle of animals through birth, developing into an adult, reproducing, and aging and death	Life Cycles and Survival (3)
			2.L.1.2	Compare life cycles of different animals such as, but not limited to, mealworms, ladybugs, crickets, guppies or frogs.	Life Cycles and Survival (3)
Evolution and Genetics	2.L.2	Remember that organisms differ from or are similar to their parents based on the characteristics of the organism.	2.L.2.1	Identify ways in which many plants and animals closely resemble their parents in observed appearance and ways they are different.	Designs Inpsired by Nature (1)
			2.L.2.2	Recognize that there is variation among individuals that are related.	Living Things: Diversity of Life (2) Variation of Traits (3)

Third Grade

Topic	Essential Standard		Clarifying Objectives		PLTW Launch Modules
Forces and Motion	3.P.1	Understand motion and factors that affect motion.	3.P.1.1	Infer changes in speed or direction resulting from forces acting on an object.	Stability and Motion: Science of Flight (3)
			3.P.1.2	Compare the relative speeds (faster or slower) of objects that travel the same distance in different amounts of time.	Objective not currently supported
			3.P.1.3	Explain the effects of earth's gravity on the motion of any object on or near the earth.	Objective not currently supported
Matter: Properties and Change	3.P.2	Understand the structure and properties of matter before and after they undergo a change.	3.P.2.1	Recognize that air is a substance that surrounds us, takes up space and has mass.	Materials Science: Properties of Matter (2)
			3.P.2.2	Compare solids, liquids, and gases based on their basic properties.	Materials Science: Properties of Matter (2)
			3.P.2.3	Summarize changes that occur to the observable properties of materials when different degrees of heat are applied to them, such as melting ice or ice cream, boiling water or an egg, or freezing water.	Materials Science: Properties of Matter (2)
Energy: Conservation and Transfer	3.P.3	Recognize how energy can be transferred from one object to another.	3.P.3.1	Recognize that energy can be transferred from one object to another by rubbing them against each other.	Objective not currently supported
			3.P.3.2	Recognize that energy can be transferred from a warmer object to a cooler one by contact or at a distance and the cooler object gets warmer.	Materials Science: Properties of Matter (2) Energy Exploration (4)
Earth in the Universe	3.E.1	Recognize the major components and patterns observed in the earth/moon/sun system.	3.E.1.1	Recognize that the earth is part of a system called the solar system that includes the sun (a star), planets, and many moons and the earth is the third planet from the sun in our solar system.	Objective not currently supported
			3.E.1.2	Recognize that changes in the length and direction of an object's shadow indicate the apparent changing position of the Sun during the day although the patterns of the stars in the sky, to include the Sun, stay the same.	Objective not currently supported
Earth Systems, Structures and Processes	3.E.2	Compare the structures of the Earth's surface using models or three-dimensional diagrams.	3.E.2.1	Compare Earth's saltwater and freshwater features (including oceans, seas, rivers, lakes, ponds, streams, and glaciers).	Earth: Past, Present, and Future (4)
			3.E.2.2	Compare Earth's land features (including volcanoes, mountains, valleys, canyons, caverns, and islands) by using models, pictures, diagrams, and maps.	Earth: Past, Present, and Future (4)
Structures and Functions of Living Organisms	3.L.1	Understand human body systems and how they are essential for life: protection, movement and support.	3.L.1.1	Compare the different functions of the skeletal and muscular system.	Objective not currently supported
			3.L.1.2	Explain why skin is necessary for protection and for the body to remain healthy.	Objective not currently supported
Ecosystems	3.L.2	Understand how plants survive in their environments.	3.L.2.1	Remember the function of the following structures as it relates to the survival of plants in their environments: • Roots – absorb nutrients • Stems – provide support • Leaves – synthesize food • Flowers – attract pollinators and produce seeds for reproduction	Organisms: Structure and Function (4) Materials Science: Form and Function (2)
			3.L.2.2	Explain how environmental conditions determine how well plants survive and grow.	Living Things: Diversity of Life (2)
			3.L.2.3	Summarize the distinct stages of the life cycle of seed plants.	Materials Science: Form and Function (2)
			3.L.2.4	Explain how the basic properties (texture and capacity to hold water) and components (sand, clay and humus) of soil determine the ability of soil to support the growth and survival of many plants.	Objective not currently supported

Fourth Grade

Topic	Essential Standard		Clarifying Objectives		PLTW Launch Modules
Forces and Motion	4.P.1	Explain how various forces affect the motion of an object.	4.P.1.1	Explain how magnets interact with all things made of iron and with other magnets to produce motion without touching them.	Stability and Motion: Forces and Interactions (3)
			4.P.1.2	Explain how electrically charged objects push or pull on other electrically charged objects and produce motion.	Objective not currently supported
Matter: Properties and Change	4.P.2	Understand the composition and properties of matter before and after they undergo a change or interaction.	4.P.2.1	Compare the physical properties of samples of matter (strength, hardness, flexibility, ability to conduct heat, ability to conduct electricity, ability to be attracted by magnets, reactions to water and fire).	Matter: Properties and Reactions (5)
			4.P.2.2	Explain how minerals are identified using tests for the physical properties of hardness, color, luster, cleavage and streak.	Objective not currently supported
			4.P.2.3	Classify rocks as metamorphic, sedimentary or igneous based on their composition, how they are formed and the processes that create them.	Objective not currently supported
Energy: Conservation and Transfer	4.P.3	Recognize that energy takes various forms that may be grouped based on their interaction with matter.	4.P.3.1	Recognize the basic forms of energy (light, sound, heat, electrical, and magnetic) as the ability to cause motion or create change.	Energy Exploration (4)
			4.P.3.2	Recognize that light travels in a straight line until it strikes an object or travels from one medium to another, and that light can be reflected, refracted, and absorbed.	Waves and the Properties of Light (4)
Earth in the Universe	4.E.1	Explain the causes of day and night and phases of the moon.	4.E.1.1	Explain the cause of day and night based on the rotation of Earth on its axis.	Patterns in the Universe (5)
			4.E.1.2	Explain the monthly changes in the appearance of the moon, based on the moon's orbit around the Earth.	Patterns in the Universe (5)
Earth History	4.E.2	Understand the use of fossils and changes in the surface of the earth as evidence of the history of Earth and its changing life forms.	4.E.2.1	Compare fossils (including molds, casts, and preserved parts of plants and animals) to one another and to living organisms.	Environmental Changes (3)
			4.E.2.2	Infer ideas about Earth's early environments from fossils of plants and animals that lived long ago.	Environmental Changes (3)
			4.E.2.3	Give examples of how the surface of the earth changes due to slow processes such as erosion and weathering, and rapid processes such as landslides, volcanic eruptions, and earthquakes.	Earth: Past, Present, and Future (4)
Ecosystems	4.L.1	Understand the effects of environmental changes, adaptations and behaviors that enable animals (including humans) to survive in changing habitats.	4.L.1.1	Give examples of changes in an organism's environment that are beneficial to it and some that are harmful.	Environmental Changes (3)
			4.L.1.2	Explain how animals meet their needs by using behaviors in response to information received from the environment.	Organisms: Structure and Function (4)
			4.L.1.3	Explain how humans can adapt their behavior to live in changing habitats (e.g., recycling wastes, establishing rain gardens, planting trees and shrubs to prevent flooding and erosion).	Earth: Human Impact and Natural Disasters (4) Weather: Factors and Hazards (3)
			4.L.1.4	Explain how differences among animals of the same population sometimes give individuals an advantage in surviving and reproducing in changing habitats.	Variation of Traits (3)
Molecular Biology	4.L.2	Understand food and the benefits of vitamins, minerals and exercise.	4.L.2.1	Classify substances as food or non-food items based on their ability to provide energy and materials for survival, growth and repair of the body.	Objective not currently supported
			4.L.2.2	Explain the role of vitamins, minerals and exercise in maintaining a healthy body.	Objective not currently supported

Fifth Grade

Topic	Essential Standard		Clarifying Objectives		PLTW Launch Modules
Forces and Motion	5.P.1	Understand force, motion and the relationship between them.	5.P.1.1	Explain how factors such as gravity, friction, and change in mass affect the motion of objects.	Energy Exploration (4)
			5.P.1.2	Infer the motion of objects in terms of how far they travel in a certain amount of time and the direction in which they travel.	Energy Exploration (4)
			5.P.1.3	Illustrate the motion of an object using a graph to show a change in position over a period of time.	Objective not currently supported
			5.P.1.4	Predict the effect of a given force or a change in mass on the motion of an object.	Energy Exploration (4)
Matter: Properties and Change	5.P.2	Understand the interactions of matter and energy and the changes that occur.	5.P.2.1	Explain how the sun's energy impacts the processes of the water cycle (including evaporation, transpiration, condensation, precipitation and runoff).	Earth's Water and Interconnected Systems (5)
			5.P.2.2	Compare the weight of an object to the sum of the weight of its parts before and after an interaction.	Matter: Properties and Reactions (5)
			5.P.2.3	Summarize properties of original materials, and the new material(s) formed, to demonstrate that a change has occurred.	Matter: Properties and Reactions (5)
Energy: Conservation and Transfer	5.P.3	Explain how the properties of some materials change as a result of heating and cooling.	5.P.3.1	Explain the effects of the transfer of heat (either by direct contact or at a distance) that occurs between objects at different temperatures. (conduction, convection or radiation)	Objective not currently supported
			5.P.3.2	Explain how heating and cooling affect some materials and how this relates to their purpose and practical applications.	Objective not currently supported
Earth Systems, Structures and Processes	5.E.1	Understand weather patterns and phenomena, making connections to the weather in a particular place and time.	5.E.1.1	Compare daily and seasonal changes in weather conditions (including wind speed and direction, precipitation, and temperature) and patterns.	Objective not currently supported
			5.E.1.2	Predict upcoming weather events from weather data collected through observation and measurements.	Objective not currently supported
			5.E.1.3	Explain how global patterns such as the jet stream and water currents influence local weather in measurable terms such as temperature, wind direction and speed, and precipitation.	Objective not currently supported
Structures and Functions of Living Organisms	5.L.1	Understand how structures and systems of organisms (to include the human body) perform functions necessary for life.	5.L.1.1	Explain why some organisms are capable of surviving as a single cell while others require many cells that are specialized to survive.	Objective not currently supported
			5.L.1.2	Compare the major systems of the human body (digestive, respiratory, circulatory, muscular, skeletal, and cardiovascular) in terms of their functions necessary for life.	Organisms: Structure and Function (4)
Ecosystems	5.L.2	Understand the interdependence of plants and animals with their ecosystem.	5.L.2.1	Compare the characteristics of several common ecosystems, including estuaries and salt marshes, oceans, lakes and ponds, forests, and grasslands.	Objective not currently supported
			5.L.2.2	Classify the organisms within an ecosystem according to the function they serve: producers, consumers, or decomposers (biotic factors).	Ecosystems: Flow of Matter and Energy (5)
			5.L.2.3	Infer the effects that may result from the interconnected relationship of plants and animals to their ecosystem.	Ecosystems: Flow of Matter and Energy (5)
Evolution and Genetics	5.L.3	Understand why organisms differ from or are similar to their parents based on the characteristics of the organism.	5.L.3.1	Explain why organisms differ from or are similar to their parents based on the characteristics of the organism.	Objective not currently supported
			5.L.3.2	Give examples of likenesses that are inherited and some that are not.	Objective not currently supported