PLTW Launch Standards Guide

WV NxGen Science Standards (K-5)

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 WV NxGen Science Standards (K-5). 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.

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

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Kindergarten

Topic	Objectives		PLTW Launch Modules
Forces and Interactions: Pushes and Pulls	S.K.GS.1	Students will plan and conduct an investigation to compare the effects of different strengths or different directions of pushes and pulls on the motion of an object.	Pushes and Pulls
	S.K.GS.2	Students will analyze data to determine if a design solution works as intended to change the speed or direction of an object with a push or a pull.	Pushes and Pulls
Interdependent Relationships in Ecosystems: Animals, Plants, and Their Environment	S.K.GS.3	Students will use observations to describe patterns of what plants and animals (including humans) need to survive.	Living Things: Needs and Impacts
	S.K.GS.4	Students will construct an argument supported by evidence for how plants and animals (including humans) can change the environment to meet their needs.	Living Things: Needs and Impacts
	S.K.GS.5	Students will use a model to represent the relationship between the needs of different plants or animals (including humans) and the places they live.	Animals and Algorithms Living Things: Needs and Impact
	S.K.GS.6	Students will communicate solutions that will reduce the impact of humans on the land, water, air, and/or other living things in the local environment.	Living Things: Needs and Impact
Weather and Climate	S.K.GS.7	Students will use and share observations of local weather conditions to describe patterns over time.	Sunlight and Weather
	S.K.GS.8	Students will ask questions to obtain information about the purpose of weather forecasting to prepare for, and respond to, severe weather.	Sunlight and Weather
	S.K.GS.9	Students will make obse1vations to dete1mine the effect of sunlight on Earth's surface.	Sunlight and Weather
	S.K.GS.10	Students will use tools and materials to design and build a structure that will reduce the wanning effect of sunlight on an area.	Sunlight and Weather

Grades K-2

Topic	Objectives		PLTW Launch Modules
Engineering Design	S.K-2.ETS.1	Students will ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.	All PLTW Launch kindergarten modules support this objective
	S.K-2.ETS.2	Students will develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.	All PLTW Launch kindergarten modules support this objective
	S.K-2.ETS.3	Students will analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.	All PLTW Launch kindergarten modules support this objective

First Grade

Topic		Objectives	PLTW Launch Modules
Waves: Light and Sound	S.1.GS.1	Students will plan and conduct investigations to provide evidence that vibrating materials can make sound and that sound can make materials vibrate.	Light and Sound
	S.1.GS.2	Students will make observations to construct an evidence-based account that objects can be seen only when illuminated.	Light and Sound
	S.1.GS.3	Students will plan and conduct an investigation to determine the effect of placing objects made with different materials in the path of a beam of light.	Light and Sound
	S.1.GS.4	Students will use tools and materials to design and build a device that uses light or sound to solve the problem of communicating over a distance.	Light and Sound
Structure, Function, and Information Processing	S.1.GS.5	Students will use materials to design a solution to a human problem by mimicking how plants and/or animals use their external parts to help them survive, grow, and meet their needs.	Animal Adaptations Designs Inspired by Nature
	S.1.GS.6	Students will read texts and use media to determine patterns in behavior of parents and offspring that help offspring survive.	Designs Inspired by Nature
	S.1.GS.7	Students will make observations to construct an evidence-based account that young plants and animals are like, but not exactly like, their parents.	Designs Inspired by Nature
Space Systems: Patterns and Cycles	S.1.GS.8	Students will use observations of the sun, moon, and stars to describe patterns that can be predicted.	Light: Observing the Sun, Moon, and Stars
	S.1.GS.9	Students will make observations at different times of year to relate the amount of daylight to the time of year.	Light: Observing the Sun, Moon, and Stars

Grades K-2

Topic		Objectives	PLTW Launch Modules
Engineering Design	S.K-2.ETS.1	Students will ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.	All PLTW Launch first grade modules support this objective
	S.K-2.ETS.2	Students will develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.	All PLTW Launch first grade modules support this objective
	S.K-2.ETS.3	Students will analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.	All PLTW Launch first grade modules support this objective

Second Grade

Topic	Objectives		PLTW Launch Modules
Structure and Properties of Matter	S.2.GS.1	Students will plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.	Materials Science: Properties of Matter
	S.2.GS.2	Students will analyze data obtained from testing different materials to determine which materials have the prope1ties that are best suited for an intended purpose.	Materials Science: Properties of Matter Materials Science: Form and Function
	S.2.GS.3	Students will make obse1vations to construct an evidence-based account of how an object made of a small set of pieces can be disassembled and made into a new object.	Materials Science: Properties of Matter Materials Science: Form and Function
	S.2.GS.4	Students will construct an argument with evidence that some changes caused by heating or cooling can be reversed and some cannot.	Materials Science: Properties of Matter
Interdependent Relationships in Ecosystems	S.2.GS.5	Students will plan and conduct an investigation to determine if plants need sunlight and water to grow.	Living Things: Diversity of Life
	S.2.GS.6	Students will develop a simple model that mimics the function of an animal in dispersing seeds or pollinating plants.	Materials Science: Form and Function
	S.2.GS.7	Students will make observations of plants and animals to compare the diversity of life in different habitats.	Living Things: Diversity of Life
Earth's Systems: Processes that Shape the Earth	S.2.GS.8	Students will use information from several sources to provide evidence that Earth events can occur quickly or slowly.	The Changing Earth
	S.2.GS.9	Students will compare multiple solutions designed to slow or prevent wind or water from changing the shape of the land.	The Changing Earth
	S.2.GS.10	Students will develop a model to represent the shapes and kinds of land and bodies of water in an area.	The Changing Earth
	S.2.GS.11	Students will obtain information to identify where water is found on Earth and that it can be solid or liquid.	The Changing Earth

Grades K-2

Topic	Objectives		PLTW Launch Modules
Engineering Design	S.K-2.ETS.1	Students will ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.	All PLTW Launch second grade modules support this objective
	S.K-2.ETS.2	Students will develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.	All PLTW Launch second grade modules support this objective
	S.K-2.ETS.3	Students will analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.	All PLTW Launch second grade modules support this objective

Third Grade

Topic	Objectives		PLTW Launch Modules
Forces and Interactions	S.3.GS.1	Students will plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object.	Stability and Motion: Science of Flight Stability and Motion: Forces and Interactions
	S.3.GS.2	Students will make observations and/or measurements of an object's motion to provide evidence that a pattern can be used to predict future motion.	Stability and Motion: Science of Flight Stability and Motion: Forces and Interactions
	S.3.GS.3	Students will ask questions to determine cause and effect relationships of electric or magnetic interactions between two objects not in contact with each other.	Stability and Motion: Forces and Interactions
	S.3.GS.4	Students will define a simple design problem that can be solved by applying scientific ideas about magnets.	Stability and Motion: Forces and Interactions
Interdependent Relationships in Ecosystems	S.3.GS.5	Students will construct an argument that some animals form groups that help members survive.	Life Cycles and Survival
	S.3.GS.6	Students will analyze and interpret data from fossils to provide evidence of the organisms and the environments in which they lived long ago.	Environmental Changes
	S.3.GS.7	Students will construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all.	Environmental Changes
	S.3.GS.8	Students will make a claim about the merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change.	Environmental Changes
Inheritance and Variation of Traits: Life Cycles and Traits	S.3.GS.9	Students will develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death.	Life Cycles and Survival
	S.3.GS.10	Students will analyze and interpret data to provide evidence that plants and animals have traits inherited from parents and that variation of these traits exists in a group of similar organisms.	Variation of Traits
	S.3.GS.11	Students will use evidence to support the explanation that traits can be influenced by the environment.	Variation of Traits
	S.3.GS.12	Students will use evidence to construct an explanation for how the variations in characteristics among individuals of the same species may provide advantages in surviving, finding mates, and reproducing.	Variation of Traits
Weather and Climate	S.3.GS.13	Students will represent data in tables and graphical displays to describe typical weather conditions expected during a particular season.	Weather: Factors and Hazards
	S.3.GS.14	Students will obtain and combine information to describe climates in different regions of the world.	Weather: Factors and Hazards
	S.3.GS.15	Students will make a claim about the merit of a design solution that reduces the impacts of a weather-related hazard.	Weather: Factors and Hazards

Grades 3-5

Topic	Objectives		PLTW Launch Modules
Engineering Design	S.3-5.ETS.1	Students will define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.	All PLTW Launch third grade modules support this objective
	S.3-5.ETS.2	Students will generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.	All PLTW Launch third grade modules support this objective
	S.3-5.ETS.3	Students will plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.	Stability and Motion: Science of Flight Stability and Motion: Forces and Interactions Programming Patterns Weather: Factors and Hazards

Fourth Grade

Topic		Objectives	PLTW Launch Modules
Energy	S.4.GS.1	Students will use evidence to construct an explanation relating the speed of an object to the energy of that object.	Energy Exploration
	S.4.GS.2	Students will make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents.	Energy Exploration
	S.4.GS.3	Students will ask questions and predict outcomes about the changes in energy that occur when objects collide.	Energy Exploration
	S.4.GS.4	Students will apply scientific ideas to design, test, and refine a device that converts energy from one form to another:	Energy Exploration
	S.4.GS.5	Students will obtain and combine information to describe that energy and fuels are derived from natural resources and their uses affect the environment.	Earth: Human Impact and Natural Disasters
Waves: Waves and Information	S.4.GS.6	Students will develop a model of waves to describe patterns in terms of amplitude and wavelength and that waves can cause objects to move.	Waves and the Properties of Light
	S.4.GS7	Students will generate and compare multiple solutions that use patterns to transfer information.	Input/Output: Computer Systems
Structure, Function, and Information Processing	S.4.GS.8	Students will develop a model to describe that light reflecting from objects and entering the eve allows objects to be seen.	Waves and the Properties of Light
	S.4.GS.9	Students will construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.	Organisms: Structure and Function
	S.4.GS.10	Students will use a model to describe that animals receive different types of information through their senses, process the information in their brain, and respond to the information in different ways.	Input/Output: Human Brain Organisms: Structure and Function
Earth's Systems: Processes that Shape the Earth	S.4.GS.11	Students will identify evidence from patterns in rock formations and fossils in rock layers to suppo1t an explanation for changes in a landscape over time.	Earth: Past, Present, and Future
	S.4.GS.12	Students will make observations and/or measurements to provide evidence of the effects of weathering or the rate of erosion by water, ice, wind, or vegetation.	Earth: Past, Present, and Future
	S.4.GS.13	Students will analyze and interpret data from maps to describe patterns of Earth's features.	Earth: Past, Present, and Future
	S.4.GS.14	Students will generate and compare multiple solutions to reduce the impacts of natural Earth processes on humans.	Earth: Human Impact and Natural Disasters

Grades 3-5

Topic		Objectives	PLTW Launch Modules
Engineering Design	S.3-5.ETS.1	Students will define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.	All PLTW Launch fourth grade modules support this objective
	S.3-5.ETS.2	Students will generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.	All PLTW Launch fourth grade modules support this objective
	S.3-5.ETS.3	Students will plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.	Energy Exploration Energy Exploration Input/Output: Computer Systems Waves and the Properties of Light

Fifth Grade

Topic		Objectives	PLTW Launch Modules
Structure and Properties of Matter	S.5.GS.1	Students will develop a model to describe that matter is made of particles too small to be seen.	Matter: Properties and Reactions
	S.5.GS.2	Students will measure and graph quantities to provide evidence that regardless of the type of change that occurs when heating, cooling, or mixing substances, the total weight of matter is conserved.	Matter: Properties and Reactions
	S.5.GS.3	Students will make observations and measurements to identify materials based on their properties.	Matter: Properties and Reactions
	S.5.GS.4	Students will conduct an investigation to determine whether the mixing of two or more substances results in new substances.	Matter: Properties and Reactions
Matter and Energy in Organisms and Ecosystems	S.5.GS.5	Students will use models to describe that energy in animals' food (used for body repair, growth, motion, and to maintain body warmth) was once energy from the sun.	Ecosystems: Flow of Matter and Energy
	S.5.GS.6	Students will support an argument that plants get the materials they need for growth chiefly from air and water.	Ecosystems: Flow of Matter and Energy
	S.5.GS.7	Students will develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.	Ecosystems: Flow of Matter and Energy
Earth's Systems	S.5.GS.8	Students will develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact.	Earth's Water and Interconnected Systems
	S.5.GS.9	Students will describe and graph the amounts and percentages of water and fresh water in various rese1voirs to provide evidence about the distribution of water on Earth.	Earth's Water and Interconnected Systems
	S.5.GS.10	Students will obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.	Robotics and Automation Earth's Water and Interconnected Systems
Space Systems: Stars and the Solar System	S.5.GS.11	Students will support an argument that the gravitational force exerted by Earth on objects is directed down.	Earth's Water and Interconnected Systems
	S.5.GS.12	Students will support an argument that differences in the apparent brightness of the sun compared to other stars is due to their relative distances from Earth.	Patterns in the Universe
	S.5.GS.13	Students will represent data in graphical displays to reveal patterns of daily changes in length and direction of shadows, day and night, and the seasonal appearance of some stars in the night sky.	Patterns in the Universe

Grades 3-5

Topic		Objectives	PLTW Launch Modules
Engineering Design	S.3-5.ETS.1	Students will define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.	All PLTW Launch fifth grade modules support this objective
	S.3-5.ETS.2	Students will generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.	All PLTW Launch fifth grade modules support this objective
	S.3-5.ETS.3	Students will plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.	Earth's Water and Interconnected Systems Ecosystems: Flow of Matter and Energy Infection: Modeling and Simulation Matter: Properties and Reactions Patterns in the Universe Robotics and Automation Robotics and Automation: Challenge