PLTW Launch Standards Guide

Wisconsin Standards for Science

PLTW Launch (PreK-5) is designed to support your 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 Guides shows how each PLTW Launch module supports the Wisconsin Standards for 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.

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

Science: Disciplinary Core Ideas (DCI) — Life Science 1 (LS1) — Structures and Processes Standard SCI.LS1: Students use science and engineering practices, crosscutting concepts, and an understanding of structures and processes (on a scale from molecules to organisms) to make sense of phenomena and solve problems.		
Learning Priority	**K-2**	**3-5**
SCI.LS1.A: Structure and Function	SCI.LS1.A.1 All organisms have external parts that they use to perform daily functions. Structure and Function: Human Body (K) Animal Adaptations (1) Designs Inspired by Nature (1) Materials Science: Form and Function (2)	SCI.LS1.A.4 Plants and animals have both internal and external macroscopic structures that allow for growth, survival, behavior, and reproduction. Variation of Traits (3) Organisms: Structure and Function (4)
SCI.LS1.B: Growth and Development of Organisms	SCI.LS1.B.1 Parents and offspring often engage in behaviors that help the offspring survive. Designs Inspired by Nature (1)	SCI.LS1.B.3 Reproduction is essential to every kind of organism. Organisms have unique and diverse life cycles. Life Cycles and Survival (3)
SCI.LS1.C: Organization for Matter and Energy Flow in Organisms	SCI.LS1.C.K Animals obtain food they need from plants or other animals. Plants need water and light. Living Things: Needs and Impacts (K) Living Things: Diversity of Life (2)	SCI.LS1.C.5 Food provides animals with the materials and energy they need for body repair, growth, warmth, and motion. Plants acquire material for growth chiefly from air, water, and process matter, and obtain energy from sunlight, which is used to maintain conditions necessary for survival. Earth's Water and Interconnected Systems (5) Ecosystems: Flow of Matter and Energy (5)
SCI.LS1.D: Information Processing	SCI.LS1.D.1 Animals sense and communicate information and respond to inputs with behaviors that help them grow and survive. Animal Adaptations (1) Designs Inspired by Nature (1)	SCI.LS1.D.4 Different sense receptors are specialized for particular kinds of information; animals use their perceptions and memories to guide their actions. Organisms: Structure and Function (4)

Science: Disciplinary Core Ideas (DCI) — Life Science 2 (LS2) — Interactions, Energy, and Dynamics Within Ecosystems Standard SCI.LS2: Students use science and engineering practices, crosscutting concepts, and an understanding of interactions, energy, and dynamics within ecosystems to make sense of phenomena and solve problems.		
Learning Priority	**K-2**	**3-5**
SCI.LS2.A: Interdependent Relationships in Ecosystems	SCI.LS2.A.2 Plants depend on water and light to grow. Plants depend on animals for pollination or to move their seeds around. Living Things: Needs and Impacts (K) Living Things: Diversity of Life (1) Materials Science: Form and Function (2)	SCI.LS2.A.5 The food of almost any animal can be traced back to plants. Organisms are related in food webs in which some animals eat plants for food and other animals eat the animals that eat plants, while decomposers restore some materials back to the soil. Ecosystems: Flow of Matter and Energy (5)
SCI.LS2.B: Cycles of Matter and Energy Transfer in Ecosystems		SCI.LS2.B.5 Matter cycles between the air and soil and among organisms as they live and die. Ecosystems: Flow of Matter and Energy (5)
SCI.LS2.C: Ecosystem Dynamics, Functioning, and Resilience		SCI.LS2.C.3 When the environment changes, some organisms survive and reproduce, some move to new locations, some move into transformed environments, and some die. Environmental Changes (3)
SCI.LS2.D: Social Interactions and Group Behavior		SCI.LS2.D.3 Being part of a group helps animals obtain food, defend themselves, and cope with changes. Life Cycles and Survival (3)

Science: Disciplinary Core Ideas (DCI) — Life Science 3 (LS3) — Heredity Standard SCI.LS3: Students use science and engineering practices, crosscutting concepts, and an understanding of heredity to make sense of phenomena and solve problems.		
Learning Priority	**K-2**	**3-5**
SCI.LS3.A: Inheritance of Traits	SCI.LS3.A.1 Young organisms are very much, but not exactly, like their parents, and also resemble other organisms of the same kind. Designs Inspired by Nature (1)	SCI.LS3.A.3 Many characteristics of organisms are inherited from their parents. Other characteristics result from individuals' interactions with the environment. Many characteristics involve both inheritance and environment. Variation of Traits (3)
SCI.LS3.B: Variation of Traits	SCI.LS3.B.1 Individuals of the same kind of plant or animal are recognizable as similar, but can also vary in many ways. Designs Inspired by Nature (1)	SCI.LS3.B.3 Different organisms vary in how they look and function because they have different inherited information; the environment also affects the traits that an organism develops. Variation of Traits (3)
Science: Disciplinary Core Ideas (DCI) — Life Science 4 (LS4) — Biological Evolution **Standard SCI.LS4: Students use science and engineering practices, crosscutting concepts, and an understanding of biological evolution to make sense of phenomena and solve problems.**		
Learning Priority	**K-2**	**3-5**
SCI.LS4.A: Evidence of Common Ancestry and Diversity		SCI.LS4.A.3 Some living organisms resemble organisms that once lived on Earth. Fossils provide evidence about the types of organisms and environments that existed long ago. Environmental Changes (3)
SCI.LS4.B: Natural Selection		SCI.LS4.B.3 Differences in characteristics between individuals of the same species provide advantages in surviving and reproducing. Variation of Traits (3)
SCI.LS4.C: Adaptation		SCI.LS4.A.3 Particular organisms can only survive in particular environments. Environmental Changes (3)
SCI.LS1.D: Biodiversity and Humans	SCI.LS1.D.2 There are many different kinds of living things in any area, and they exist in different places on land and in water. Living Things: Diversity of Life (2)	SCI.LS4.D.3 Populations of organisms live in a variety of habitats. Change in those habitats affects the organisms living there. Environmental Changes (3)

Science: Disciplinary Core Ideas (DCI) — Physical Science 1 (PS1) — Matter and Its Interactions Standard SCI.PS1: Students use science and engineering practices, crosscutting concepts, and an understanding of matter and its interactions to make sense of phenomena and solve problems.		
Learning Priority	**K-2**	**3-5**
SCI.PS1.A: Structure and Function	SCI.PS1.A.2 Matter exists as different substances that have different observable properties. Different properties are suited to different purposes. Objects can be built up from smaller parts. Materials Science: Properties of Matter (2)	SCI.PS1.A.4 Matter exists as particles that are too small to see. Matter is always conserved even if it seems to disappear. Measurements of a variety of observable properties can be used to identify particular materials. Matter: Properties and Reactions (5)
SCI.PS1.B: Chemical Reactions	SCI.PS1.B.2 Heating or cooling a substance may cause changes that can be observed. Sometimes these changes are reversible, and sometimes they are not. Materials Science: Properties of Matter (2)	SCI.PS1.B.5 Chemical reactions that occur when substances are mixed can be identified by the emergence of substances with different properties. In chemical reactions the total mass remains the same. Matter: Properties and Reactions (5)

Science: Disciplinary Core Ideas (DCI) — Physical Science 2 (PS2) — Forces, Interactions, Motion, and Stability Standard SCI.PS2: Students use science and engineering practices, crosscutting concepts, and an understanding of forces, interactions, motion, and stability to make sense of phenomena and solve problems.		
Learning Priority	**K-2**	**3-5**
SCI.PS2.A: Forces and Motion	SCI.PS2.A.K Pushes and pulls can have different strengths and directions, and can change the speed or direction of an object's motion, or start or stop it. A bigger push or pull makes things speed up or slow down more quickly. Pushes and Pulls (K)	SCI.PS2.A.3 Qualities of motion and changes in motion require description of both size and direction. The effect of unbalanced forces on an object results in a change of motion. Patterns of motion can be used to predict future motion. Stability and Motion: Science of Flight (3) Stability and Motion: Forces and Interactions (3)
SCI.PS2.B: Types of Interactions	SCI.PS2.B.K When objects touch or collide, they push on one another and can result in a change of motion. Pushes and Pulls (K)	SCI.PS2.B.3 Some forces act through contact, some forces (e.g. magnetic, electrostatic) act even when the objects are not in contact. Stability and Motion: Forces and Interactions (3) SCI.PS2.B.5 The gravitational force of Earth acting on an object near Earth's surface pulls that object toward the planet's center. Stability and Motion: Science of Flight (3) Stability and Motion: Forces and Interactions (3) Earth's Water and Interconnected Systems (5)

Science: Disciplinary Core Ideas (DCI) — Physical Science 3 (PS3) — Energy Standard SCI.PS3: Students use science and engineering practices, crosscutting concepts, and an understanding of energy to make sense of phenomena and solve problems.		
Learning Priority	**K-2**	**3-5**
SCI.PS3.A: Definitions of Energy		SCI.PS3.A.4 Moving objects contain energy. The faster the object moves, the more energy it has. Energy Exploration (4)
SCI.PS3.B: Conservation of Energy and Energy Transfer		SCI.PS3.B.4 Energy can be moved from place to place by moving objects, or through sound, light, or electrical currents. Energy can be converted from one form to another form. Energy Exploration (4)
SCI.PS3.C: Relationships between Energy and Forces	SCI.PS3.C.K Bigger pushes and pulls cause bigger changes in an object's motion or shape. Pushes and Pulls (K)	SCI.PS3.C.4 When objects collide, contact forces transfer energy so as to change objects' motions. Energy Exploration (4)
SCI.PS3.D: Energy in Chemical Processes and Everyday Life	SCI.PS3.D.K Sunlight warms Earth's surface. Sunlight and Weather (K) Light: Observing the Sun, Moon, and Stars (1)	SCI.PS3.D.4, 5 Plants capture energy from sunlight which can be used as fuel or food. Stored energy in food or fuel can be converted to useable energy. Ecosystems: Flow of Matter and Energy (5)

Science: Disciplinary Core Ideas (DCI) — Physical Science 4 (PS4) — Waves and Their Applications in Technologies for Information Transfer Standard SCI.PS4: Students use science and engineering practices, crosscutting concepts, and an understanding of waves and their applications in technologies for information transfer to make sense of phenomena and solve problems.		
Learning Priority	**K-2**	**3-5**
SCI.PS4.A: Wave Properties	SCI.PS4.A.1 Sound can make matter vibrate, and vibrating matter can make sound. Light and Sound (1)	SCI.PS4.A.4 Waves are regular patterns of motion, which can be made in water by disturbing the surface. Waves of the same type can differ in amplitude and wavelength. Waves can make objects move. Waves and the Properties of Light (4)
SCI.PS4.B: Electro- magnetic Radiation	SCI.PS4.B.1 Objects can be seen only when light is available to illuminate them. Light and Sound (1)	SCI.PS4.B.4 Objects can be seen when light reflected from their surface enters our eyes. Waves and the Properties of Light (4)
SCI.PS4.C: Information Technologies and Instru- mentation	SCI.PS4.C.1 People use devices to send and receive information. Light and Sound (1)	SCI.PS4.C.4 Patterns can encode, send, receive, and decode information. Input/Output: Computer Systems (4)

Science: Disciplinary Core Ideas (DCI) — Earth and Space Science 1 (ESS1) — Earth's Place in the Universe Standard SCI.ESS1: Students use science and engineering practices, crosscutting concepts, and an understanding of earth's place in the universe to make sense of phenomena and solve problems.		
Learning Priority	**K-2**	**3-5**
SCI.ESS1.A: The Universe and Its Stars	SCI.ESS1.A.1 Patterns of movement of the sun, moon, and stars, as seen from Earth, can be observed, described, and predicted. Light: Observing the Sun, Moon, and Stars (1)	SCI.ESS1.A.5 Stars range greatly in size and distance from Earth, and this can explain their relative brightness. Patterns in the Universe (5)
SCI.ESS1.B: Earth and the Solar System	SCI.ESS1.B.1 Seasonal patterns of sunrise and sunset can be observed, described, and predicted. Light: Observing the Sun, Moon, and Stars (1)	SCI.ESS1.B.5 The Earth's orbit and rotation, and the orbit of the moon around the Earth cause observable patterns. Patterns in the Universe (5)
SCI.ESS1.C: The History of Planet Earth	SCI.ESS1.C.2 Some events on Earth occur very quickly; others can occur very slowly. The Changing Earth (2)	SCI.ESS1.C.4 Certain features on Earth can be used to order events that have occurred in a landscape. Earth: Past, Present, and Future (4)

Science: Disciplinary Core Ideas (DCI) — Earth and Space Science 2 (ESS2) — Earth's Systems Standard SCI.ESS2: Students use science and engineering practices, crosscutting concepts, and an understanding of earth's systems to make sense of phenomena and solve problems.		
Learning Priority	**K-2**	**3-5**
SCI.ESS2.A: Earth Materials and Systems	SCI.ESS2.A.2 Wind and water change the shape of the land. The Changing Earth (2)	SCI.ESS2.A.4,5 Four major Earth systems interact. Rainfall helps to shape the land and affects the types of living things found in a region. Water, ice, wind, organisms, and gravity break rocks, soils, and sediments into smaller pieces and move them around. Earth: Past, Present, and Future (4) Earth's Water and Interconnected Systems (5)
SCI.ESS2.B: Plate Tectonics and Large-Scale System Interactions	SCI.ESS2.B.2 Maps show where things are located. One can map the shapes and kinds of land and water in any area. The Changing Earth (2)	SCI.ESS2.B.4 Earth's physical features occur in patterns, as do earthquakes and volcanoes. Maps can be used to locate features and determine patterns in those events. Earth: Past, Present, and Future (4)
SCI.ESS2.C: The Roles of Water in Earth's Surface Processes	SCI.ESS2.C.2 Water is found in many types of places and in different forms on Earth. The Changing Earth (2)	SCI.ESS2.C.5 Most of Earth's water is in the ocean, and much of the Earth's freshwater is in glaciers or underground. Earth's Water and Interconnected Systems (5)
SCI.ESS2.D: Weather and Climate	SCI.ESS2.D.K Weather is the combination of sunlight, wind, snow or rain, and temperature in a particular region and time. People record weather patterns over time. Sunlight and Weather (K)	SCI.ESS2.D.3 Climate describes patterns of typical weather conditions over different scales and variations. Historical weather patterns can be analyzed. Weather: Factors and Hazards (3)
SCI.ESS2.E: Biogeology	SCI.ESS2.E.K Plants and animals can change their local environment. Living Things: Needs and Impacts (K)	SCI.ESS2.E.4 Living things can affect the physical characteristics of their environment. Earth: Past, Present, and Future (4)

Science: Disciplinary Core Ideas (DCI) — Earth and Space Science 3 (ESS3) — Earth and Human Activity Standard SCI.ESS3: Students use science and engineering practices, crosscutting concepts, and an understanding of earth and human activity to make sense of phenomena and solve problems.		
Learning Priority	**K-2**	**3-5**
SCI.ESS3.A: Natural Resources	SCI.ESS3.A.K Living things need water, air, and resources from the land, and they live in places that have the things they need. Humans use natural resources for everything they do. Life Science: Living and Nonliving Things (PreK) Living Things: Needs and Impacts (K)	SCI.ESS3.A.4 Energy and fuels humans use are derived from natural sources, and their use affects the environment. Some resources are renewable over time, others are not. Earth: Human Impact and Natural Disasters (4)
SCI.ESS3.B: Natural Hazards	SCI.ESS3.B.K In a region, some kinds of severe weather are more likely than others. Forecasts allow communities to prepare for severe weather. Sunlight and Weather (K)	SCI.ESS3.B.3,4 A variety of hazards result from natural processes; humans cannot eliminate hazards but can reduce their impacts. Earth: Human Impact and Natural Disasters (4)
SCI.ESS3.C: Human Impacts on Earth Systems	SCI.ESS3.C.K Things people do can affect the environment but they can make choices to reduce their impacts. Living Things: Needs and Impacts (K)	SCI.ESS3.C.5 Societal activities have had major effects on the land, ocean, atmosphere, and even outer space. Societal activities can also help protect Earth's resources and environments. Earth: Human Impact and Natural Disasters (4) Earth's Water and Interconnected Systems (5)

Science: Disciplinary Core Ideas (DCI) — Engineering, Technology, and the Application of Science 1 (ETS) — Engineering Design Standard SCI.ETS1: Students use science and engineering practices, crosscutting concepts, and an understanding of engineering design to make sense of phenomena and solve problems.		
Learning Priority	**K-2**	**3-5**
SCI.ETS1.A: Defining and Delimiting Engineering Problems	SCI.ETS1.A.K-2 A situation that people want to change or create can be approached as a problem to be solved through engineering. Asking questions, making observations, and gathering information are helpful in thinking about problems. Before beginning to design a solution, it is important to clearly understand the problem. All kindergarten through second grade PLTW Launch modules support this performance indicator.	SCI.ETS1.A.3-5 Possible solutions to a problem are limited by available materials and resources (constraints). The success of a designed solution is determined by considering the desired features of a solution (criteria). Different proposals for solutions can be compared on the basis of how well each one meets the specified criteria for success or how well each takes the constraints into account. All third through fifth grade PLTW Launch modules support this performance indicator.
SCI.ETS1.B: Developing Possible Solutions	SCI.ETS1.B.K-2 Designs can be conveyed through sketches, drawings, or physical models. These representations are useful in communicating ideas for a problem's solutions to other people. All kindergarten through second grade PLTW Launch modules support this performance indicator.	SCI.ETS1.B.3-5 Research on a problem should be carried out before beginning to design a solution. Testing a solution involves investigating how well it performs under a range of likely conditions. All third through fifth grade PLTW Launch modules support this performance indicator. SCI.ETS1.B.3-5 At whatever stage, communicating with peers about proposed solutions is an important part of the design process, and shared ideas can lead to improved designs. Tests are often designed to identify failure points or difficulties, which suggest the elements of the design that need to be improved. All third through fifth grade PLTW Launch modules support this performance indicator.

Science: Disciplinary Core Ideas (DCI) — Engineering, Technology, and the Application of Science 1 (ETS) — Engineering Design Standard SCI.ETS1: Students use science and engineering practices, crosscutting concepts, and an understanding of engineering design to make sense of phenomena and solve problems.		
Learning Priority	**K-2**	**3-5**
SCI.ETS1.C: Optimizing the Design Solution	SCI.ETS1.C.2 Because there is more than one possible solution to a problem, it is useful to compare and test designs. All kindergarten through second grade PLTW Launch modules support this performance indicator.	SCI.ETS1.C.4 Different solutions need to be tested in order to determine which of them best solves the problem, given the criteria and the constraints. Stability and Motion: Science of Flight (3) Stability and Motion: Forces and Interactions (3) Programming Patterns (3) Weather: Factors and Hazards (3) Energy Exploration (4) Energy Exploration (4) Input/Output: Computer Systems (4) Waves and the Properties of Light (4) Robotics and Automation (5) Robotics and Automation: Challenge (5) Infection: Modeling and Simulation (5) Matter: Properties and Reactions (5) Ecosystems: Flow of Matter and Energy (5) Patterns in the Universe (5) Earth's Water and Interconnected Systems (5)

Science: Disciplinary Core Ideas (DCI) — Engineering, Technology, and the Application of Science 2 (ETS2) — Links Among Engineering, Technology, Science, and Society Standard SCI.ETS2: Students use science and engineering practices, crosscutting concepts, and an understanding of links among engineering, technology, science, and society to make sense of phenomena and solve problems.		
Learning Priority	**K-2**	**3-5**
SCI.ETS2.A: Interdependence of Science, Engineering, and Technology	SCI.ETS2.A.K-2 Designs can be conveyed through sketches, drawings, or physical models. These representations are useful in communicating ideas for a problem's solutions to other people. All kindergarten through second grade PLTW Launch modules support this performance indicator.	SCI.ETS2.A.3-5 Research on a problem should be carried out before beginning to design a solution. Testing a solution involves investigating how well it performs under a range of likely conditions. All third through fifth grade PLTW Launch modules support this performance indicator.
SCI.ETS2.B: Influence of Engineering, Technology, and Science on Society and the Natural World	SCI.ETS2.B.K-2 Every human-made product is designed by applying some knowledge of the natural world and is built by using natural materials. Taking natural materials to make things impacts the environment. Living Things: Needs and Impacts (K) Animal Adaptations (1) Designs Inspired by Nature (1) Materials Science: Properties of Matter (2) Materials Science: Form and Function (2) Living Things: Diversity of Life (2)	SCI.ETS2.B.3-5 People's needs and wants change over time, as do their demands for new and improved technologies. Engineers improve existing technologies or develop new ones to increase their benefits, decrease known risks, and meet societal demands. SCI.ETS2.B.3-5 When new technologies become available, they can bring about changes in the way people live and interact with one another. All third through fifth grade PLTW Launch modules support this performance indicator.

Science: Disciplinary Core Ideas (DCI) — Engineering, Technology, and the Application of Science 3 (ETS3) — Nature of Science and Engineering Standard SCI.ETS3: Students use science and engineering practices, crosscutting concepts, and an understanding of the nature of science and engineering to make sense of phenomena and solve problems.		
Learning Priority	**K-2**	**3-5**
SCI.ETS3.A: Science and Engineering Are Human Endeavors	SCI.ETS3.A.K-2 People of diverse backgrounds can become scientists and engineers. People have practiced science and engineering for a long time. Creativity and imagination are important to science and engineering. All kindergarten through second grade PLTW Launch modules support this performance indicator.	SCI.ETS3.A.3-5 Science and engineering knowledge have been created by many cultures. People use the tools and practices of science and engineering in many different situations (e.g. land managers, technicians, nurses, and welders). Science and engineering affect everyday life. All third through fifth grade PLTW Launch modules support this performance indicator.
SCI.ETS3.B: Science and Engineering Are Unique Ways of Thinking With Different Purposes	SCI.ETS3.B.K-2 Scientists use evidence to explain the natural world. Science assumes natural events happen today as they happened in the past. Engineers solve problems to meet the needs of people and communities. All kindergarten through second grade PLTW Launch modules support this performance indicator.	SCI.ETS3.B.3-5 Science and engineering are both bodies of knowledge and processes that add new knowledge to our understanding. Scientific findings are limited to what can be supported with evidence from the natural world. All third through fifth grade PLTW Launch modules support this performance indicator. SCI.ETS3.B.3-5 Basic laws of nature are the same everywhere in the universe (e.g. gravity, conservation of matter, energy transfer, etc.). Engineering solutions often have drawbacks as well as benefits. All third through fifth grade PLTW Launch modules support this performance indicator.

Science: Disciplinary Core Ideas (DCI) — Engineering, Technology, and the Application of Science 3 (ETS3) — Nature of Science and Engineering Standard SCI.ETS3: Students use science and engineering practices, crosscutting concepts, and an understanding of the nature of science and engineering to make sense of phenomena and solve problems.		
Learning Priority	**K-2**	**3-5**
SCI.ETS3.C: Science and Engineering Use Multiple Approaches to Create New Knowledge and Solve Problems	SCI.ETS3.C.K-2 Science and engineers use many approaches to answer questions about the natural world and solve problems. Scientific explanations are strengthened by being supported with evidence. An engineering problem can have many solutions. The strength of a solution depends on how well it solves the problem. All kindergarten through second grade PLTW Launch modules support this performance indicator.	SCI.ETS3.C.3-5 The products of science and engineering are not developed through one set “scientific method” or “engineering design process.” Instead, they use a variety of approaches described in the Science and Engineering Practices. Science explanations are based on a body of evidence and multiple tests, and describe the mechanisms for natural events. Science explanations can change based on new evidence. There is no perfect design in engineering. Designs that are best in some ways (e.g. safety or ease of use) may be inferior in other ways (e.g. cost or aesthetics). All third through fifth grade PLTW Launch modules support this performance indicator.