



PLTW Launch Modules Overview

Texas Essential Knowledge and Skills

This curriculum guide provides standards connections for 2 bodies of standards:

1. Science TEKS
2. Technology Applications TEKS

Each PLTW Launch module integrates science standards with science and engineering practices and recurring themes and concepts, while focusing on engineering, computer science, or one of the four areas of science outlined in the TEKS:

- matter and its properties (energy)
- force, motion, and energy
- earth and space
- organisms and environments

PLTW Launch Modules have been thoughtfully connected to the TEKS for use by Texas educators. Each grade level contains 3-6 PLTW Launch Modules that are the “best-fit” for the Science TEKS. When grade level suggestions vary from the intended grade level it is shown like this: *Light and Sound (1)* to indicate that the module was originally developed for use in 1st Grade.

Texas educators also have the flexibility to utilize the PLTW Launch Modules in the grade level that works best for their students.







PLTW Computer Science










PLTW Engineering



PLTW
LAUNCH K-5 Science TEKS





	Matter and its properties (energy) 		Force, motion, and energy 		Earth and space 		Organisms and environments 	
K	Matter: Floating and Sinking (PK) S.K.6	Structure and Function: Exploring Design S.K.6	Light and Sound (1) S.K.8.A, S.K.8.B		Sunlight and Weather S.K.9.B, S.K.10.B		Living Things: Needs and Impacts S.K.12.A, S.K.12.B	Animals and Algorithms S.K.12.B
1			Pushes and Pulls (K) S.1.7.A, S.1.7.B		The Changing Earth (2) S.1.10.B, S.1.11.A		Designs Inspired by Nature S.1.13.A, S.1.13.C	
2	Materials Science: Properties of Matter S.2.6.A, S.2.6.B, S.2.6.C	Materials Science: Form and Function S.2.6.A, S.2.12.C, S.2.13.A			Light: Observing the Sun, Moon, and Stars (1) S.2.9.A	Weather: Factors and Hazards (3) S.2.10.B, S.2.10.C	Living Things: Diversity of Life S.2.12.A, S.2.12.B	Animal Adaptations (1) S.2.13.B
3	Stability and Motion: Forces and Interactions S.3.6.A, S.3.7.A		Stability and Motion: Science of Flight S.3.7.A		Earth: Human Impact and Natural Disasters (4) S.3.10.C, S.3.11.A, S.3.11.B, S.3.11.C		Environmental Changes S.3.12.C, S.3.12.D	Life Cycles and Survival S.3.12.C, S.3.13.B
4					Earth's Water and Interconnected Systems (5) S.4.10.A, S.4.11.A, S.4.11.B	Earth: Past, Present, and Future S.4.10.B, S.4.12.C	Organisms: Structure and Function S.4.13.A	Variation of Traits (3) S.4.13.B
5	Matter: Properties and Reactions S.5.6.A, S.5.6.B, S.5.6.C, S.5.6.D		Energy Exploration (4) S.5.7.A, S.5.7.B, S.5.8.A, S.5.8.B	Waves and the Properties of Light (4) S.5.6.D, S.5.8.B, S.5.8.C	Patterns in the Universe S.5.9		Ecosystems: Flow of Matter and Energy S.5.12.A, S.5.12.B, S.5.12.C	

		Essential Questions	Science	Scientific and engineering practices	Recurring themes and concepts	Technology Application TEKS	
★ Alignments for all modules noted in green							
	Matter: Floating and Sinking (PK) Why do some objects float and other sink? How can patterns be used to predict results and solve problems? How can a step-by-step process help you design or improve a solution to a problem?	S.K.6	★ S.K.1.A, B S.K.1.D, E S.K.1.G S.K.2.A, B S.K.2.D		S.K.5.E	★ K.3.A, B K.5 K.7.A, B K.8.A	K.8.C
	Structure and Function: Exploring Design How can a step-by-step process help you design or improve a solution to a problem? How do materials impact the structure and function of an object? How does the structure of an object impact its function?	S.K.6	S.K.1.F S.K.4.B	S.K.5.F			
	Light and Sound (1) How do light and sound affect your life? Why is understanding cause and effect important to your life? How can collaboration help you solve problems?	S.K.8.A S.K.8.B	★	S.K.4.A S.K.4.B	S.K.5.B	★	K.8.C
	Sunlight and Weather How does the Sun affect Earth? How does weather affect our lives? How can a step-by-step process help you design or improve a solution to a problem?	S.K.9.A S.K.10.B	★	S.K.1.F S.K.2.C S.K.4.B	S.K.5.A S.K.5.B	★	K.4.A K.8.C
	Living Things: Needs and Impacts How can plants and animals impact their natural environment to meet their needs? How can humans lessen their negative impact on the natural environment? How can a step-by-step process help you design or improve a solution to a problem?	S.K.12.A S.K.12.B	★	S.K.1.F	S.K.5.A S.K.5.B S.K.5.G	★	K.8.C
	Animals and Algorithms How can you use algorithms in your daily life? How can you use computer programming to complete a task? How can a step-by-step process help you design or improve a solution to a problem?	S.K.12.B	★	S.K.4.B	S.K.5.D S.K.5.G	★	K.1.A K.1.B K.1.C K.2 K.8.B
	Structure and Function: Human Body How are structure and function related? How would we function if our bodies were structured differently? How can a step-by-step process help you design or improve a solution to a problem?		★	S.K.4.B	S.K.5.D S.K.5.F	★	

Essential Questions

Science	Scientific and engineering practices	Recurring themes and concepts	Technology Application TEKS
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★ Alignments for all modules noted in green

	<p>Pushes and Pulls (K)</p>	<p>In what ways do forces impact your daily life? How are pushes and pulls related? How can a step-by-step process help you design or improve a solution to a problem?</p>	<p>S.1.7.A S.1.7.B</p>	<p>★ S.1.1.A, B S.1.1.D → G S.1.2.A, B S.1.2.D S.1.3.A → C S.K.3.A → C</p>	<p>S.1.4.A S.1.4.B</p>	<p>S.1.5.B</p>	<p>★ 1.3.A 1.3.B 1.6 1.8.A → C 1.9.A 1.9.C</p>	<p>1.5.A</p>
	<p>The Changing Earth (2)</p>	<p>How can something appear stable when it is actually changing? How are system models used to predict and understand real-world situations or scientific phenomena? How can a step-by-step process help you design or improve a solution to a problem?</p>	<p>S.1.10.B S.1.11.A</p>	<p>★</p>	<p>S.1.2.C S.1.4.A</p>	<p>S.1.5.A S.1.5.D S.1.5.F</p>	<p>★</p>	
	<p>Designs Inspired by Nature</p>	<p>Why do animals communicate as they do? How can nature inspire solutions to human problems? How can a step-by-step process help you design or improve a solution to a problem?</p>	<p>S.1.13.A S.1.13.C</p>	<p>★</p>	<p>S.1.4.B</p>	<p>S.1.5.D</p>	<p>★</p>	
	<p>Animated Storytelling</p>	<p>In what ways can stories be told using different tools? How does technology impact our lives? How can a step-by-step process help you design or improve a solution to a problem?</p>		<p>★</p>	<p>S.1.4.B</p>	<p>S.1.5.A</p>	<p>★</p>	<p>1.1.A 1.1.B 1.1.C 1.2 1.7.B 1.9.B</p>

Essential Questions

Science

Scientific and engineering practices

Recurring themes and concepts

Technology Application TEKS

★ Alignments for all modules noted in green



Materials Science: Properties of Matter

What properties of materials do you need to consider when designing a product?
How can we identify when something is (or is not) a solution to a problem?

S.2.6.A
S.2.6.B
S.2.6.C

★
S.2.1.A, B
S.2.1.D → G
S.2.2.A, B
S.2.2.D
S.2.3.A → C

S.2.2.C
S.2.4.A
S.2.4.B

S.2.5.E
S.2.5.F

★
2.9.A → C
2.10.A
2.10.C

2.5.A
2.6

Materials Science: Form and Function

How does the function of an object influence its form?
How does nature influence design?
How can a step-by-step process help you design or improve a solution to a problem?

S.2.6.A
S.2.12.C
S.2.13.A

S.2.4.A
S.2.4.B

S.2.5.F



Light: Observing the Sun, Moon, and Stars (1)

How does the Sun affect your life?
Why is understanding cause and effect important to your life?
What is the relationship between patterns and natural phenomena?

S.2.9.A

★

S.2.9.A

S.2.5.A
S.2.5.B
S.2.5.C
S.2.5.D

★

Weather: Factors and Hazards (3)

How does weather affect our lives?
How can a step-by-step process help you design or improve a solution to a problem?

S.2.10.B
S.2.10.C

★

S.2.4.B

S.2.5.A
S.2.5.B

★



Living Things: Diversity of Life

How do scientists learn about the world?
How do diverse habitats meet the needs of organisms?
How can a step-by-step process help you design or improve a solution to a problem?

S.2.12.A
S.2.12.B

★

S.2.4.B

S.2.5.G

★

2.6

Animal Adaptations (1)

How do plants and animals adapt to their environments?
How can nature inspire solutions to human problems?
How can a step-by-step process help you design or improve a solution to a problem?

S.2.13.B

★

S.2.2.C
S.2.4.B

S.2.5.F

★



Grids and Games

How can learning from others help you design or improve a solution to a problem?
In what ways can computer science impact our lives?

★

S.2.4.B

S.2.5.A

★

2.1.A → D
2.2.B
2.3.A, B
2.7
2.10.B

Essential Questions






Science

Scientific and engineering practices

Recurring themes and concepts

Technology Application TEKS

★ Alignments for all modules noted in green

	<p>Stability and Motion: Forces and Interactions</p>	<p>In what ways do forces impact your daily life? How do machines make life easier? How can a step-by-step process help you design or improve a solution to a problem?</p>	<p>S.3.6.A S.3.7.A</p>	<p>★ S.3.1.A, B S.3.1.D → G</p>	<p>S.3.2.A S.3.4.A S.3.4.B</p>	<p>S.3.5.G</p>	<p>★ 3.3.A, B 3.8.A</p>	<p>3.12.A 3.12.E</p>
	<p>Stability and Motion: Science of Flight</p>	<p>In what ways do forces impact our world? How do balanced and unbalanced forces affect aircraft flight? How can a step-by-step process help you design or improve a solution to a problem?</p>	<p>S.3.7.A</p>	<p>S.3.2.D S.3.3.A → C</p>	<p>S.3.2.A S.3.2.B S.3.2.C S.3.4.A S.3.4.B</p>	<p>S.3.5.G</p>	<p>3.10.A, C</p>	
	<p>Earth: Human Impact and Natural Disasters (4)</p>	<p>In what ways do human interactions impact Earth? How do natural hazards impact Earth? How can a step-by-step process help you design or improve a solution to a problem?</p>	<p>S.3.10.C S.3.11.A S.3.11.B S.3.11.C</p>	<p>★</p>	<p>S.3.2.A S.3.2.B S.3.4.A</p>	<p>S.3.5.A S.3.5.B S.3.5.G</p>	<p>★</p>	<p>3.12.E</p>
	<p>Environmental Changes</p>	<p>How does an animal's habitat affect its survival? How do environmental changes affect organisms? How can a step-by-step process help you design or improve a solution to a problem?</p>	<p>S.3.12.C S.3.12.D</p>	<p>★</p>	<p>S.3.2.A S.3.2.B S.3.4.A S.3.4.B</p>	<p>S.3.5.A S.3.5.B S.3.5.D S.3.5.G</p>	<p>★</p>	<p>3.12.E</p>
	<p>Life Cycles and Survival</p>	<p>Why are life cycles of organisms important for life on Earth? How do bees impact our world? How can a step-by-step process help you design or improve a solution to a problem?</p>	<p>S.3.12.C S.3.13.B</p>	<p>★</p>	<p>S.3.2.B S.3.4.A S.3.4.B</p>	<p>S.3.5.A S.3.5.D S.3.5.G</p>	<p>★</p>	<p>3.12.E</p>
	<p>Programming Patterns</p>	<p>How does technology impact our lives? How can a step-by-step process help you design or improve a solution to a problem?</p>		<p>★</p>	<p>S.3.2.A S.3.2.B S.3.4.B</p>	<p>S.3.5.D</p>	<p>★</p>	<p>3.1.A → D 3.2.B</p>

Essential Questions





Science

Scientific and engineering practices

Recurring themes and concepts

Technology Application TEKS

★ Alignments for all modules noted in green

	Earth's Water and Interconnected Systems (5)	How do Earth's major systems interact? Is there enough fresh water on Earth? How can a step-by-step process help you design or improve a solution to a problem?	S.4.10.A S.4.11.A S.4.11.B	★ S.4.1.A, B S.4.1.D → G S.4.2.D S.4.3.A → C	S.4.2.A S.4.2.B S.4.2.C S.4.4.A	S.4.5.C S.4.5.D	★ 4.3.B 4.7 4.8.A 4.10.A, C 4.12.E	4.6
	Earth: Past, Present, and Future	How has Earth changed over time? Why is Earth constantly changing? How can a step-by-step process help you design or improve a solution to a problem?	S.4.10.B S.4.12.C	S.4.2.B S.4.4.B	S.4.5.G	4.11.A		
	Organisms: Structure and Function	How are organisms structured to support and sustain life? How do scientists and engineers understand the world around them? How can a step-by-step process help you design or improve a solution to a problem?	S.4.13.A	★	S.4.2.A S.4.2.B S.4.4.A S.4.4.B	S.4.5.A S.4.5.F	★	
	Variation of Traits (3)	Why do some offspring look like their parents while others do not? How are traits of one generation passed to the next? How can a step-by-step process help you design or improve a solution to a problem?	S.4.13.B	★	S.4.2.B S.4.4.A S.4.4.B	S.4.5.A	★	
	Input/Output: Computer Systems	How does technology impact our lives? In what ways do computing systems work together to accomplish tasks? How can a step-by-step process help you design or improve a solution to a problem?		★	S.4.2.A	S.4.5.D	★ 4.1.A → D 4.2.A, B 4.3.A	4.4 4.5.A 4.6 4.9.A 4.12.B
	Input/Output: Human Brain	How does technology impact our lives? In what ways do computing systems work together to accomplish tasks? How can a step-by-step process help you design or improve a solution to a problem?		★	S.4.2.B S.4.4.A S.4.4.B	S.4.5.D S.4.5.F	★	4.11.A

Essential Questions

Science

Scientific and engineering practices

Recurring themes and concepts

Technology Application TEKS

★ Alignments for all modules noted in green



Matter: Properties and Reactions

How do the structures and properties of matter help us solve real-world problems?
 How do mechanical properties impact engineering design?
 How can a step-by-step process help you design or improve a solution to a problem?

S.5.6.A
S.5.6.B
S.5.6.C
S.5.6.D

★
S.5.1.A, B
S.5.1.D → G

S.5.4.B

S.5.5.C

★
5.3.B



Energy Exploration (4)

Why is energy necessary?
 How does energy transfer affect your life?
 How can a step-by-step process help you construct an explanation or design a solution to a problem?

S.5.7.A
S.5.7.B
S.5.8.A
S.5.8.B

S.5.2.A, B
S.5.2.D
S.5.3.A → C

S.5.4.A
S.5.4.B

S.5.5.D

★

5.3.A

Waves and the Properties of Light (4)

How are waves used to predict results and solve problems?
 How do the properties of light allow us to see?
 How can we use patterns to make sense of the world?
 How can a step-by-step process help you design or improve a solution to a problem?

S.5.6.D
S.5.8.B
S.5.8.C

★

S.5.5.A
S.5.5.B

★



Patterns in the Universe

What is Earth's place in the universe?
 How do the predictable patterns of Earth impact our lives?
 How can a step-by-step process help you design or improve a solution to a problem?

S.5.9

★

S.5.5.A
S.5.5.C
S.5.5.D

★

5.3.A



Ecosystems: Flow of Matter and Energy

How do matter and energy flow through an ecosystem?
 How does a change in an ecosystem affect its balance?
 How can a step-by-step process help you design or improve a solution to a problem?

S.5.12.A
S.5.12.B
S.5.12.C

★

S.5.5.D
S.5.5.E

★

Robotics and Automation

How can automation and robotics be used to protect the Earth's resources and environment?
 How can the engineering design process be applied in daily life?

★

S.5.4.A
S.5.4.B

S.5.5.D
S.5.5.G

★

5.3.A
5.4



Robotics and Automation: Challenge

How can autonomous robots be used to help people?
 How can a step-by-step process help you design or improve a solution to a problem?

★

S.5.4.A
S.5.4.B

S.5.5.B
S.5.5.D
S.5.5.G

★

5.2.B, C
5.3.A
5.4
5.5.B



Infection: Detection

How can germs be spread from person to person?
 How do medical professionals use cause and effect relationships to diagnose illnesses?
 How can a step-by-step process help you design or improve a solution to a problem?

★

S.5.4.A
S.5.4.B

S.5.5.F
S.5.5.G

★

5.1.A
5.1.B

Infection: Modeling and Simulation

How do computer models and simulations help us to make sense of scientific phenomena?
 In what ways can computer models and simulations be used to predict outcomes?
 How can a step-by-step process help you design or improve a solution to a problem?

★

S.5.4.A
S.5.4.B

S.5.5.C

★

5.4
5.5.A
5.6