

Connecting PLTW Launch to Your Existing Science Curriculum



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**SPARKING
CURIOSITY**
A PLTW Launch Conference

PLTW

Agenda

- PLTW Launch modules overview
 - Modules supporting NGSS
- Curriculum Frameworks
- How is support accomplished?
- Individual state standards support and existing science adoptions
- Collaborating with peers
- Q and A
- Exploratorium





~12/14 hours/module



Healthy Habits



Life Science: Living and Nonliving Things



Spatial Sense and Coding



Floating and Sinking



Structure and Function: Human Body



Animals and Algorithms



Pushes and Pulls



Sunlight and Weather



Living Things: Needs and Impacts



Structure and Function: Exploring Design



Animal Adaptations



Animated Storytelling



Light and Sound



Designs Inspired by Nature



Light: Observing Sun, Moon, Stars



Living Things: Diversity of Life



Grids and Games



Materials Science: Properties of Matter



Changing Earth



Materials Science: Form and Function



Variation of Traits



Programming Patterns



Stability and Motion: Forces and Interactions



Environmental Changes



Life Cycles and Survival



Stability and Motion: Science of Flight



Weather Factors and Hazards



Input/Output: Human Brain



Input/Output: Computer Systems



Earth: Human Impact and Natural Disasters



Earth: Past, Present, and Future



Energy Exploration



Organisms: Structure and Function



Waves and the Properties of Light



Infection: Detection



Robotics and Automation



Matter: Properties and Reactions



Earth's Water and Interconnected Systems



Ecosystems: Flow of Matter and Energy



Infection: Modeling and Simulation



Patterns in the Universe



Robotics and Automation: Challenge

PreK

K

1st

2nd

3rd

4th

5th



LIFE SCIENCES SCENARIO



PreK.1 Life Science: Living and Nonliving Things



K.6 Living Things: Needs and Impacts



1.3 Animal Adaptations



1.5 Designs Inspired by Nature



2.2 Materials Science: Form and Function



2.5 Living Things: Diversity of Life



3.3 Variation of Traits



3.6 Life Cycles and Survival



3.7 Environmental Changes



4.4 Input/Output: Human Brain



4.6 Organisms: Structure and Function

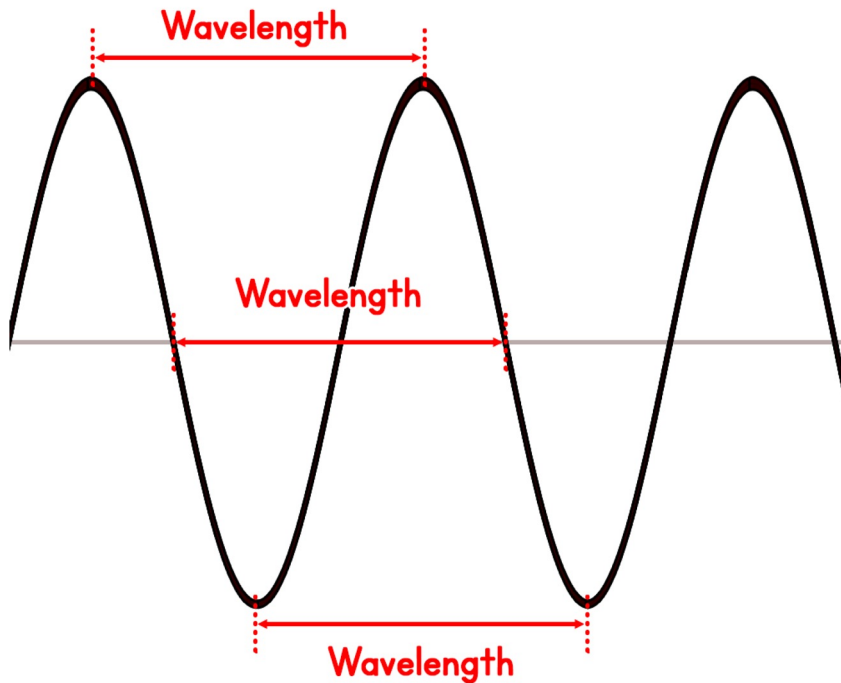


5.6 Ecosystems: Flow of Matter and Energy



~12-14 hours / module

PHYSICAL SCIENCES SCENARIO



PreK.2 Floating and Sinking



K.2 Pushes and Pulls



K.5 Sunlight and Weather



1.1 Light and Sound



2.1 Materials Science: Properties of Matter



2.2 Materials Science: Form and Function



3.1 Stability and Motion: Science of Flight



3.2 Stability and Motion: Forces and Interactions



4.3 Input/Output: Computer Systems



4.5 Waves and Properties of Light



4.9 Energy Exploration



5.5 Matter: Properties and Reactions



5.6 Ecosystems: Flow of Matter and Energy



5.8 Earth's Water and Interconnected Systems



~12-14 hours / module



EARTH AND SPACE SCIENCES SCENARIO



PreK.1 Life Science: Living and Nonliving Things



K.4 Animals and Algorithms



K.5 Sunlight and Weather



K.6 Living Things: Needs and Impacts



1.2 Light: Observing Sun, Moon, Stars



2.3 Changing Earth



3.5 Weather Factors and Hazards



4.7 Earth: Past, Present, and Future



4.8 Earth: Human Impact and Natural Disasters



5.1 Robotics and Automation



5.7 Patterns in the Universe



5.8 Earth's Water and Interconnected Systems



~12-14 hours / module

Supporting NGSS Performance Expectations

~12/14 hours/module

PreK	K	1st	2nd	3rd	4th	5th
 Healthy Habits	 Structure and Function: Human Body   Animals and Algorithms   Pushes and Pulls   Sunlight and Weather   Living Things: Needs and Impacts  Structure and Function: Exploring Design	  Animal Adaptations  Animated Storytelling   Light and Sound   Designs Inspired by Nature   Light: Observing Sun, Moon, Stars	  Living Things: Diversity of Life  Grids and Games   Materials Science: Properties of Matter   Changing Earth   Materials Science: Form and Function	  Variation of Traits  Programming Patterns   Stability and Motion: Forces and Interactions   Environmental Changes   Life Cycles and Survival   Stability and Motion: Science of Flight   Weather Factors and Hazards	  Input/Output: Human Brain  Input/Output: Computer Systems   Earth: Human Impact and Natural Disasters   Earth: Past, Present, and Future   Energy Exploration   Organisms: Structure and Function   Waves and the Properties of Light	 Infection: Detection  Robotics and Automation   Matter: Properties and Reactions   Earth's Water and Interconnected Systems   Ecosystems: Flow of Matter and Energy  Infection: Modeling and Simulation   Patterns in the Universe  Robotics and Automation: Challenge

Intentionally designed to support science needs

- my.pltw.org
 - Courses
 - Module teacher guide
 - Introduction to the module
 - “Connection to Standards and Curriculum Framework”

PLTW Launch Curriculum Framework – Fifth Grade

Matter: Properties and Reactions

Established Standards / Goals / Practices	Desired Results (Stage 1)	
	Transfers	Essential Question
<p><i>For full details, see Connections to Standards in the Teacher Guide.</i></p> <p>Next Generation Science Standards <i>Science and Engineering Practices</i></p> <ul style="list-style-type: none">• Asking Questions and Defining Problems• Developing and Using Models• Planning and Carrying Out Investigations• Analyzing and Interpreting Data• Using Mathematics and Computational Thinking• Constructing Explanations and Designing Solutions• Engaging in Argument from Evidence• Obtaining, Evaluating, and Communicating Information <p><i>Disciplinary Core Ideas</i></p> <ul style="list-style-type: none">• Structure and Properties of Matter• Chemical Reactions• Engineering Design <p><i>Crosscutting Concepts</i></p> <ul style="list-style-type: none">• Scale, Proportion, and Quantity• Cause and Effect <p><i>Connections</i></p> <ul style="list-style-type: none">• Influence of Engineering, Technology, and Science on Society and the Natural World• Science Knowledge Assumes an Order and Consistency in Natural Systems <p>CSTA K-12 Computer Science Standards</p> <ul style="list-style-type: none">• Computing Systems• Networks and the Internet• Data and Analysis <p>Common Core English Language Arts</p> <ul style="list-style-type: none">• Reading: Informational Text• Writing• Speaking and Listening <p>Common Core Mathematics</p> <ul style="list-style-type: none">• Measurement and Data• Mathematical Practices	<p>Students will be able to independently use their learning to...</p> <ul style="list-style-type: none">• T1: Evaluate a problem in a new and novel situation.• T2: Apply a step-by-step design process to solve a problem.• T3: Evaluate a material based on its properties.	<p>Students will keep considering</p> <ul style="list-style-type: none">• EQ1: How do the structures properties of matter help us real-world problems?• EQ2: How do mechanical properties impact engineering design?• EQ3: How can a step-by-step help you design or improve to a problem?

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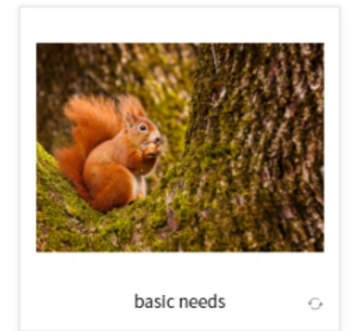
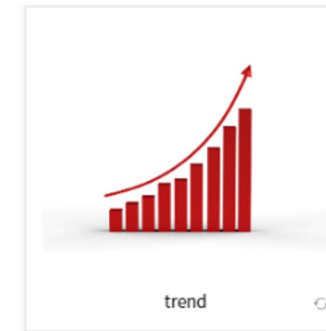
CCCs in Environmental Changes

- **Patterns** of change can be used to make predictions.
- **Cause and Effect** relationships are routinely identified and used to explain change.



10 Discuss these questions with your class:

- Why are icebergs important to the polar bears?
- What is the trend in the amount of arctic sea ice over time?
- Based on what you know about polar bears' basic needs, what do you think could happen to polar bears if this trend continues?
- What environmental change causes the sea ice to melt?



SEP: Developing and Using Models

Life Cycles and Survival

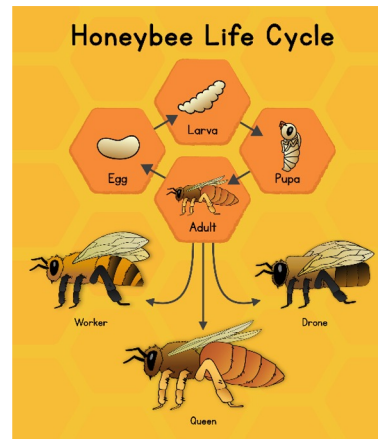
- Problem: How can we design a bee habitat **model** that promotes bee survival and meets the needs of bees?

5

Locate the page in your Launch Log titled, "Solving the Problem." Use this section to take notes as you work through the design process to create your bee habitat model. Be sure to include evidence for your thinking in your notes.

- Follow these criteria and constraints for your design:

Criteria	Constraints
<ul style="list-style-type: none">◦ Promotes bee survival by meeting the needs of bees◦ Includes food, water, calm air, and shelter or a location where a shelter (hive or nest) could be built◦ Models the local habitat	<ul style="list-style-type: none">◦ Time◦ Materials



Supporting Performance Expectations

Matter: Properties and Reactions

- 5-PS1-1 Develop a model to describe that matter is made of particles too small to be seen.
- 5-PS1-2 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.
- 5-PS1-3 Make observations and measurements to identify materials based on their properties.
- 5-PS1-4 Conduct an investigation to determine whether the mixing of two or more substances results in new substances.

Investigation 1

Introduction

In this investigation, you will mix cooking oil and water to determine whether they create a new substance.

Materials

- 50 mL graduated cylinders (2)
- 100 mL beaker
- Disposable transfer pipette
- Stir stick
- Cooking oil (10 mL)
- Water (80 mL)
- Safety glasses (1 per student)
- Digital device
- Device application:
 - Stopwatch

Procedure

Accessing Standards Guides

NGSS Standards Guide

[PLTW Launch Science Standards for NGSS](#)

PLTW Launch Standards Guides by State

The PLTW Launch Standards Guides by State help schools identify how PLTW Launch supports your science experiences through STEM.

Alaska	+
Alabama	+
Arizona	+
Colorado	+



Supporting schools with existing science curriculums



PLTW Launch Parallelization to Amplify Science NGSS K-5

This resource is intended to support schools in identifying how PLTW Launch can enrich Amplify implementations through the use of PLTW Launch module experiences.

PLTW Launch Module	Performance Expectations Supported	Amplify Unit	Performance Expectations Supported
Kindergarten			
Pushes and Pulls	K-PS2-1 K-PS2-2 K-2-ETS1-1 K-2-ETS1-2 K-2-EST1-3	Pushes and Pulls	K-PS2-1 K-PS2-2 K-2-ETS1-1 K-2-ETS1-2 K-2-EST1-3
Sunlight and Weather	K-PS3-1 K-PS3-2 K-ESS2-1 K-ESS2-2 K-2-ETS1-1 K-2-ETS1-2 K-2-EST1-3	Sunlight and Weather	K-PS3-1 K-PS3-2 K-ESS2-1 K-ESS2-2 K-2-ETS1-1 K-2-ETS1-2

- Amplify
- EIE
- Foss
- McGraw Hill
Inspire
- Mystery
Science
- Savvas
- Stemscores
- Twig Science



Identifying potential new modules to support state science standards



Questions?

Thoughts?



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