

Connections to Standards in PLTW Launch

PLTW curriculum is designed to empower students to thrive in an evolving world. As a part of the design process when developing and updating our curriculum, we focus on connections to a variety of standards. This PLTW Launch module connects to standards in the following:

Next Generation Science Standards	Page 2
Common Core State Standards English Language Arts - Second Grade	Page 5
Common Core State Standards Mathematics - Second Grade	Page 6

Next Generation Science Standards

Matter and Its Interactions

2-PS1-1

Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.

2-PS1-2

Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose.

2-PS1-3

Make observations 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.

2-PS1-4

Construct an argument with evidence that some changes caused by heating or cooling can be reversed and some cannot.

Engineering Design

K-2-ETS1-1

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.

K-2-ETS1-2

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.

K-2-ETS1-3

Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.

Science and Engineering Practices: Asking Questions and Defining Problems

Asking questions and defining problems in K–2 builds on prior experiences and progresses to simple descriptive questions that can be tested.

Science and Engineering Practices: Developing and Using Models

Modeling in K–2 builds on prior experiences and progresses to include using and developing models (i.e., diagram, drawing, physical replica, diorama, dramatization, or storyboard) that represent concrete events or design solutions.

Next Generation Science Standards

Science and Engineering Practices: Planning and Carrying Out Investigations

Planning and carrying out investigations to answer questions or test solutions to problems in K–2 builds on prior experiences and progresses to simple investigations, based on fair tests, which provide data to support explanations or design solutions.

- Plan and conduct an investigation collaboratively to produce data to serve as the basis for evidence to answer a question.

Science and Engineering Practices: Analyzing and Interpreting Data

Analyzing data in K–2 builds on prior experiences and progresses to collecting, recording, and sharing observations.

- Analyze data from tests of an object or tool to determine if it works as intended.

Science and Engineering Practices: Using Mathematics and Computational Thinking

Mathematical and computational thinking in K–2 builds on prior experience and progresses to recognizing that mathematics can be used to describe the natural and designed world(s).

Science and Engineering Practices: Constructing Explanations and Designing Solutions

Constructing explanations and designing solutions in K–2 builds on prior experiences and progresses to the use of evidence and ideas in constructing evidence-based accounts of natural phenomena and designing solutions.

- Make observations (firsthand or from media) to construct an evidence-based account for natural phenomena.

Science and Engineering Practices: Engaging in Argument from Evidence

Engaging in argument from evidence in K–2 builds on prior experiences and progresses to comparing ideas and representations about the natural and designed world(s).

- Construct an argument with evidence to support a claim.

Science and Engineering Practices: Obtaining, Evaluating, and Communicating Information

Obtaining, evaluating, and communicating information in K–2 builds on prior experiences and uses observations and texts to communicate new information.

Disciplinary Core Ideas (K-2)

Physical Science

PS1.A Structure and Properties of Matter

- Different kinds of matter exist and many of them can be either solid or liquid, depending on temperature. Matter can be described and classified by its observable properties.

PS1.A Structure and Properties of Matter

- Different properties are suited to different purposes.

PS1.B Chemical Reactions

- Heating and cooling substances cause changes that are sometimes reversible and sometimes not.

Next Generation Science Standards

PS1.A Structure and Properties of Matter

- A great variety of objects can be built up from a small set of pieces.

Engineering, Technology, and Applications of Science

ETS1.A Defining and Delimiting Engineering Problems

- Asking questions, making observations, and gathering information are helpful in thinking about problems.

ETS1.A Defining and Delimiting Engineering Problems

- Before beginning to design a solution, it is important to clearly understand the problem.

ETS1.B Developing Possible Solutions

- 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.

ETS1.C Optimizing the Design Solution

- Because there is always more than one possible solution to a problem, it is useful to compare and test designs.

Crosscutting Concepts (K-2)

Patterns – Observed patterns in nature guide organization and classification and prompt questions about relationships and causes underlying them.

- Patterns in the natural and human designed world can be observed, used to describe phenomena, and used as evidence.

Cause and Effect: Mechanism and Prediction – Events have causes, sometimes simple, sometimes multifaceted. Deciphering causal relationships, and the mechanisms by which they are mediated, is a major activity of science and engineering.

- Events have causes that generate observable patterns.
- Simple tests can be designed to gather evidence to support or refute student ideas about causes.

Energy and Matter: Flows, Cycles, and Conservation – Tracking energy and matter flows, into, out of, and within systems helps one understand their system's behavior.

- Objects may break into smaller pieces, be put together into larger pieces, or change shapes.

Connections to Nature of Science (K-2)

Science Models, Laws, Mechanisms, and Theories Explain Natural Phenomena

- Scientists search for cause and effect relationships to explain natural events.

Connections to Engineering, Technology, and Applications of Science (K-2)

Influence of Engineering, Technology, and Science on Society and the Natural World

- Every human-made product is designed by applying some knowledge of the natural world and is built using materials derived from the natural world.

Common Core State Standards English Language Arts - Second Grade

Reading Informational Text

Key Ideas and Details

CCSS.ELA-LITERACY.RI.2.1

Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text.

CCSS.ELA-LITERACY.RI.2.3

Describe the connection between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text.

Writing

Research to Build and Present Knowledge

CCSS.ELA-LITERACY.W.2.7

Participate in shared research and writing projects (e.g., read a number of books on a single topic to produce a report; record science observations).

CCSS.ELA-LITERACY.W.2.8

Recall information from experiences or gather information from provided sources to answer a question.

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Common Core State Standards Mathematics - Second Grade

Measurement and Data

Represent and interpret data.

CCSS.MATH.CONTENT.2.MD.D.10

Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems using information presented in a bar graph.

Mathematical Practices

CCSS.MATH.PRACTICE.MP4

Model with mathematics.

CCSS.MATH.PRACTICE.MP5

Use appropriate tools strategically.

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References

National Governors Association Center for Best Practices, & Council of Chief State School Officers. (2010). *Common Core State Standards*. National Governors Association Center for Best Practices, Council of Chief State School Officers.

NGSS Lead States. (2013). *Next Generation Science Standards: For states, by states*. National Academies Press.