PLTW Launch Standards Connection

The Changing Earth

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

Earth's Place in the Universe

2-ESS1-1

Use information from several sources to provide evidence that Earth events can occur quickly or slowly.

Earth's Systems

2-ESS2-1

Compare multiple solutions designed to slow or prevent wind or water from changing the shape of the land.

2-ESS2-2

Develop a model to represent the shapes and kinds of land and bodies of water in an area.

2-ESS2-3

Obtain information to identify where water is found on Earth and that it can be solid or liquid.

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.

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.

Next Generation Science Standards

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.

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.
- Generate and/or compare multiple solutions to a problem.

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).

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)

Earth and Space Science

ESS1.C The History of Planet Earth

- Some events on Earth occur very quickly; others can occur very slowly.

ESS2.A Earth Materials and Systems

- Wind and water change the shape of the land.

ESS2.B Plate Tectonics and Large-scale System Interactions

- Maps show where things are located. One can map the shapes and kinds of land and water in any area.

ESS2.C The Roles of Water in Earth’s Surface Processes

- Water is found in many types of places and in different forms on Earth.

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.

Next Generation Science Standards

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.

Systems and System Models – A system is an organized group of related objects or components; models can be used for understanding and predicting the behavior of systems.

- Objects and organisms can be described in terms of their parts.
- Systems in the natural and designed world have parts that work together.

Structure and Function – The way an object is shaped or structured determines many of its properties and functions.

- The shape and stability of structures of natural and designed objects are related to their function(s).

Stability and Change – For both designed and natural systems, conditions that affect stability and factors that control rates of change are critical elements to consider and understand.

- Things may change slowly or rapidly.

Connections to Nature of Science (K-2)

Science Addresses Questions About the Natural and Material World

- Scientists study the natural and material world.

Computer Science Teachers Association K-12 Computer Science

In Spring 2023 PLTW submitted all necessary documentation required by the Computer Science Teachers Association (CSTA) for a crosswalk review of our Launch and Gateway curricula by the CSTA Standards Review Team. While we anticipate approval and validation by CSTA, the review is pending.

Data and Analysis

Collection Visualization & Transformation

1A-DA-06

Collect and present the same data in various visual formats.

Inference & Models

1A-DA-07

Identify and describe patterns in data visualizations, such as charts or graphs, to make predictions.

Algorithms and Programming

Modularity

1A-AP-11

Decompose (break down) the steps needed to solve a problem into a precise sequence of instructions.

Impacts of Computing

Social Interactions

1A-IC-17

Work respectfully and responsibly with others online.

Safety Law & Ethics

1A-IC-18

Keep login information private, and log off of devices appropriately.

Common Core State Standards English Language Arts - Second Grade

Reading Literature

Key Ideas and Details

CCSS.ELA-LITERACY.RL.2.1

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

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.

Speaking and Listening

Comprehension and Collaboration

CCSS.ELA-LITERACY.SL.2.1

Participate in collaborative conversations with diverse partners about grade 2 topics and texts with peers and adults in small and larger groups.

CCSS.ELA-LITERACY.SL.2.2

Recount or describe key ideas or details from a text read aloud or information presented orally or through other media.

Common Core State Standards Mathematics - Second Grade

Mathematical Practices

CCSS.MATH.PRACTICE.MP1

Make sense of problems and persevere in solving them.

CCSS.MATH.PRACTICE.MP2

Reason abstractly and quantitatively.

CCSS.MATH.PRACTICE.MP3

Construct viable arguments and critique the reasoning of others.

CCSS.MATH.PRACTICE.MP4

Model with mathematics.

CCSS.MATH.PRACTICE.MP5

Use appropriate tools strategically.

CCSS.MATH.PRACTICE.MP6

Attend to precision.

Common Core State Standards Mathematics - Second Grade

Included in Optional Extensions

Number and Operations in Base Ten

Use place value understanding and properties of operations to add and subtract.

CCSS.MATH.CONTENT.2.NBT.B.6

Add up to four two-digit numbers using strategies based on place value and properties of operations.

Measurement and Data

Measure and estimate lengths in standard units.

CCSS.MATH.CONTENT.2.MD.A.1

Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.

CCSS.MATH.CONTENT.2.MD.A.3

Estimate lengths using units of inches, feet, centimeters, and meters.

Work with time and money.

CCSS.MATH.CONTENT.2.MD.C.7

Tell and write time from analog and digital clocks to the nearest five minutes, using a.m. and p.m.

CCSS.MATH.CONTENT.2.MD.C.8

Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using $ and ¢ symbols appropriately. Example: If you have 2 dimes and 3 pennies, how many cents do you have?

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.MP7

Look for and make use of structure.

CCSS.MATH.PRACTICE.MP8

Look for and express regularity in repeated reasoning.

References

Computer Science Teachers Association. (2017). *CSTA K-12 Computer Science Standards, revised 2017*. http://www.csteachers.org/standards

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