PLTW Launch Standards Connection

Sunlight and Weather

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:

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Computer Science Teachers Association K-12 Computer Science Standards	Page 6
Common Core State Standards English Language Arts - Kindergarten	Page 7
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Next Generation Science Standards

Energy

K-PS3-1

Make observations to determine the effect of sunlight on Earth’s surface.

K-PS3-2

Use tools and materials provided to design and build a structure that will reduce the warming effect of sunlight on Earth's surface.

Earth’s Systems

K-ESS2-1

Use and share observations of local weather conditions to describe patterns over time.

Earth and Human Activity

K-ESS3-2

Ask questions to obtain information about the purpose of weather forecasting to prepare for, and respond to, severe weather.

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.

- Ask questions based on observations to find more information about the natural and/or designed world(s).

Next Generation Science Standards

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.

- Make observations (firsthand or from media) and/or measurements to collect data that can be used to make comparisons.

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.

- Use observations (firsthand or from media) to describe patterns and/or relationships in the natural and designed world(s) in order to answer scientific questions and solve problems.

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.

- Use tools and/or materials to design and/or build a device that solves a specific problem or a solution to a specific 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.

- Read grade-appropriate texts and/or use media to obtain scientific and/or technical information to determine patterns in and/or evidence about the natural and designed world(s).

Next Generation Science Standards

Disciplinary Core Ideas (K-2)

Physical Science

PS3.B Conservation of Energy and Energy Transfer

- Sunlight warms Earth’s surface.

Earth and Space Science

ESS2.D Weather and Climate

- Weather is the combination of sunlight, wind, snow or rain, and temperature in a particular region and time. People measure these conditions to describe and record the weather and to notice patterns over time.

ESS3.B Natural Hazards

- Some kinds of severe weather are more likely than others in a given region. Weather scientists forecast severe weather so that the communities can prepare for and respond to these events.

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.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.

Next Generation Science Standards

Connections to Nature of Science (K-2)

Science Knowledge is Based on Empirical Evidence

- Scientists look for patterns and order when making observations about the world.

Scientific Investigations Use a Variety of Methods

- Scientists use different ways to study the world.

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

Interdependence of Science, Engineering, and Technology

- People encounter questions about the natural world every day.

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

- People depend on various technologies in their lives; human life would be very different without technology.

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.

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 - Kindergarten

Literature Standards

Key Ideas and Details

CCSS.ELA-LITERACY.RL.K.1

With prompting and support, ask and answer questions about key details in a text.

CCSS.ELA-LITERACY.RL.K.3

With prompting and support, identify characters, settings, and major events in a story.

CCSS.ELA-LITERACY.RL.K.10

Actively engage in group reading activities with purpose and understanding.

Reading Standards for Informational Text

Key Ideas and Details

CCSS.ELA-LITERACY.RI.K.1

With prompting and support, ask and answer questions about key details in a text.

CCSS.ELA-LITERACY.RI.K.2

With prompting and support, identify the main topic and retell key details of a text.

Range of Reading and Level of Text Complexity

CCSS.ELA-LITERACY.RI.K.10

Actively engage in group reading activities with purpose and understanding.

Language Arts Writing Standards

Text Types and Purposes

CCSS.ELA-LITERACY.W.K.2

Use a combination of drawing, dictating, and writing to compose informative/explanatory texts in which they name what they are writing about and supply some information about the topic.

Language Arts Speaking and Listening Standards

Comprehension and Collaboration

CCSS.ELA-LITERACY.SL.K.1

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

CCSS.ELA-LITERACY.SL.K.2

Confirm understanding of a text read aloud or information presented orally or through other media by asking and answering questions about key details and requesting clarification if something is not understood.

Common Core State Standards English Language Arts - Kindergarten

CCSS.ELA-LITERACY.SL.K.3

Ask and answer questions in order to seek help, get information, or clarify something that is not understood.

Presentation of Knowledge and Ideas

CCSS.ELA-LITERACY.SL.K.5

Add drawings or other visual displays to descriptions as desired to provide additional detail.

CCSS.ELA-LITERACY.SL.K.6

Speak audibly and express thoughts, feelings, and ideas clearly.

Common Core State Standards Mathematics - Kindergarten

Counting and Cardinality

Know number names and the count sequence.

CCSS.MATH.CONTENT.K.CC.A.3

Write numbers from 0 to 20. Represent a number of objects with a written numeral 0-20 (with 0 representing a count of no objects).

Measurement and Data

Describe and compare measurable attributes.

CCSS.MATH.CONTENT.K.MD.A.2

Directly compare two objects with a measurable attribute in common, to see which object has “more of”/“less of” the attribute, and describe the difference.

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.

Common Core State Standards Mathematics - Kindergarten

Included in Optional Extensions

Counting and Cardinality

Count to tell the number of objects.

CCSS.MATH.CONTENT.K.CC.B.4

Understand the relationship between numbers and quantities; connect counting to cardinality.

CCSS.MATH.CONTENT.K.CC.B.5

Count to answer “how many?” questions about as many as 20 things arranged in a line, a rectangular array, or a circle, or as many as 10 things in a scattered configuration; given a number from 1–20, count out that many objects.

Compare numbers.

CCSS.MATH.CONTENT.K.CC.C.6

Identify whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group, e.g., by using matching and counting strategies.

Operations and Algebraic Thinking

Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from.

CCSS.MATH.CONTENT.K.OA.A.2

Solve addition and subtraction word problems, and add and subtract within 10, e.g., by using objects or drawings to represent the problem.

CCSS.MATH.CONTENT.K.OA.A.4

For any number from 1 to 9, find the number that makes 10 when added to the given number, e.g., by using objects or drawings, and record the answer with a drawing or equation.

Number and Operations in Base Ten

Work with numbers 11–19 to gain foundations for place value.

CCSS.MATH.CONTENT.K.NBT.A.1

Compose and decompose numbers from 11 to 19 into ten ones and some further ones, e.g., by using objects or drawings, and record each composition or decomposition by a drawing or equation (e.g., 18 = 10 + 8); understand that these numbers are composed

Mathematical Practices

CCSS.MATH.PRACTICE.MP4

Model with mathematics.

Common Core State Standards Mathematics - Kindergarten

CCSS.MATH.PRACTICE.MP5

Use appropriate tools strategically.

CCSS.MATH.PRACTICE.MP6

Attend to precision.

References

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

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