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 and Human Activity

K-ESS3-1

Use a model to represent the relationship between the needs of different plants and animals (including humans) and the places they live.

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.

- Develop and/or use a model to represent amounts, relationships, relative scales (bigger, smaller), and/or patterns in the natural and designed world(s).

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.

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.

Next Generation Science Standards

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.

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)

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.

Next Generation Science Standards

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.

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.

Computing Systems

Devices

1A-CS-01

Select and operate appropriate software to perform a variety of tasks, and recognize that users have different needs and preferences for the technology they use.

Algorithms and Programming

Variables

1A-AP-09

Model the way programs store and manipulate data by using numbers or other symbols to represent information.

Control

1A-AP-10

Develop programs with sequences and simple loops, to express ideas or address a problem.

Modularity

1A-AP-11

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

Program Development

1A-AP-12

Develop plans that describe a program's sequence of events, goals, and expected outcomes.

Program Development

1A-AP-14

Debug (identify and fix) errors in an algorithm or program that includes sequences and simple loops.

Program Development

1A-AP-15

Using correct terminology, describe steps taken and choices made during the iterative process of program development.

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.3

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

Language Arts Writing Standards

Text Types and Purposes

CCSS.ELA-LITERACY.W.K.3

Use a combination of drawing, dictating, and writing to narrate a single event or several loosely linked events, tell about the events in the order in which they occurred, and provide a reaction to what happened.

Production and Distribution of Writing

CCSS.ELA-LITERACY.W.K.6

With guidance and support from adults, explore a variety of digital tools to produce and publish writing, including in collaboration with peers.

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.1.a

Follow agreed-upon rules for discussions (e.g., listening to others and taking turns speaking about the topics and texts under discussion).

CCSS.ELA-LITERACY.SL.K.1.b

Continue a conversation through multiple exchanges.

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.

Common Core State Standards Mathematics - Kindergarten

Counting and Cardinality

Know number names and the count sequence.

CCSS.MATH.CONTENT.K.CC.A.1

Count to 100 by ones and by tens.

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.

Geometry

Identify and describe shapes (squares, circles, triangles, rectangles, hexagons, cubes, cones, cylinders, and spheres).

CCSS.MATH.CONTENT.K.G.A.1

Describe objects in the environment using names of shapes, and describe the relative positions of these objects using terms such as above, below, beside, in front of, behind, and next to.

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

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.

Geometry

Identify and describe shapes (squares, circles, triangles, rectangles, hexagons, cubes, cones, cylinders, and spheres).

CCSS.MATH.CONTENT.K.G.A.2

Correctly name shapes regardless of their orientations or overall size.

Analyze, compare, create, and compose shapes.

CCSS.MATH.CONTENT.K.G.B.5

Model shapes in the world by building shapes from components (e.g., sticks and clay balls) and drawing shapes.

References

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

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