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
- Computer Science Teachers Association K-12 Computer Science Standards Page 5
- Common Core State Standards English Language Arts - Kindergarten Page 7
- Common Core State Standards Mathematics - Kindergarten Page 8
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.
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.

1A-AP-14

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

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.

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**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.

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**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.

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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.

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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

