PLTW Launch Standards Connection

Life Science: Living and Nonliving Things

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:

NAEYC Early Learning Program Standards

Relationships

This program promotes positive relationships between all children and adults to encourage each child's sense of individual worth and belonging as part of a community and to foster each child's ability to contribute as a responsible community member.

Curriculum

The program implements a curriculum that is consistent with its goals for children and that promotes learning and development in each of the following areas: social, emotional, physical, language, and cognitive.

Teaching

The program uses a variety of developmentally, culturally, and linguistically appropriate and effective teaching approaches, which enhance each child's learning and development in the context of the program's curriculum goals.

Assessment of Child Progress

The program uses a variety of formal and informal assessment approaches to provide information on children's learning and development. These assessments occur in the context of reciprocal communications between teachers and families, and with sensitivity to cultural contexts in which children are developing.
The program uses assessment results to inform decisions about the children in their care, to improve teaching practices, and to drive program

Families

The program establishes and maintains collaborative relationships with each child's family to foster children's development in all settings. These relationships are sensitive to family composition, language, and culture.

Community Relationships

The program establishes relationships with and uses the resources of the children's communities to support the achievement of program goals.

Physical Environment

The program has a safe and healthful environment that provides appropriate and well-maintained indoor and outdoor physical environments. The environment includes facilities, equipment, and materials to facilitate child and staff learning and development.

Head Start Early Learning Outcomes Framework

Approaches to Learning

Cognitive Self-regulation (Executive Functioning)

Goal P-ATL 6

Child maintains focus and sustains attention with minimal adult support.

Goal P-ATL 7

Child persists in tasks.

Goal P-ATL 8

Child holds information in mind and manipulates it to perform tasks.

Goal P-ATL 9

Child demonstrates flexibility in thinking and behavior.

Initiative and Curiosity

Goal P-ATL 10

Child demonstrates initiative and independence.

Goal P-ATL 11

Child shows interest in and curiosity about the world around them.

Creativity

Goal P-ATL 12

Child expresses creativity in thinking and communication.

Goal P-ATL 13

Child uses imagination in play and interactions with others.

Language and Communication

Attending and Understanding

Goal P-LC 1

Child attends to communication and language from others.

Goal P-LC 2

Child understands and responds to increasingly complex communication and language from others.

Communicating and Speaking

Goal P-LC 3

Child varies the amount of information provided to meet the demands of the situation.

Goal P-LC 4

Child understands, follows, and uses appropriate social and conversational rules.

Goal P-LC 5

Child expresses self in increasingly long, detailed, and sophisticated ways.

Head Start Early Learning Outcomes Framework

Vocabulary

Goal P-LC 6

Child understands and uses a wide variety of words for a variety of purposes.

Goal P-LC 7

Child shows understanding of word categories and relationships among words.

Literacy

Comprehension and Text Structure

Goal P-LIT 4

Child demonstrates an understanding of narrative structure through storytelling/re-telling.

Goal P-LIT 5

Child asks and answers questions about a book that was read aloud.

Writing

Goal P-LIT 6

Child writes for a variety of purposes using increasingly sophisticated marks.

Mathematics Development

Measurement

Goal P-MATH 8

Child measures objects by their various attributes using standard and non-standard measurement. Uses differences in attributes to make comparisons.

Scientific Reasoning

Scientific Inquiry

Goal P-SCI 1

Child observes and describes observable phenomena (objects, materials, organisms, and events).

Goal P-SCI 2

Child engages in scientific talk.

Goal P-SCI 3

Child compares and categorizes observable phenomena.

Reasoning and Problem-Solving

Goal P-SCI 4

Child asks a question, gathers information, and makes predictions.

Goal P-SCI 5

Child plans and conducts investigations and experiments.

Head Start Early Learning Outcomes Framework

Goal P-SCI 6

Child analyzes results, draws conclusions, and communicates results.

Next Generation Science Standards

While NGSS does not include standards for early childhood learning, research led the PLTW Launch team to develop content that provides a scaffold to NGSS. Modules address Science and Engineering Practices, Crosscutting Concepts, and Disciplinary Core Ideas, and also provide a learning progression toward elementary science standards.

From Molecules to Organisms: Structures and Processes

K-LS1-1

Use observations to describe patterns of what plants and animals (including humans) need to survive.

Earth's Systems

K-ESS2-2

Construct an argument supported by evidence for how plants and animals (including humans) can change the environment to meet their needs.

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.

K-ESS3-3

Communicate solutions that will reduce the impact of humans on the land, water, air, and/or other living things in the local environment.

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.

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.

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.

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 Idea (K-2)

Life Science

LS1.C Organization for Matter and Energy Flow in Organisms

- All animals need food in order to live and grow. They obtain their food from plants or from other animals. Plants need water and light to live and grow.

Earth and Space Science

ESS2.E Biogeology

- Plants and animals can change their environment.

Next Generation Science Standards

ESS3.A Natural Resources

- Living things need water, air, and resources from the land, and they live in places that have the things they need. Humans use natural resources for everything they do.

ESS3.C Human Impacts on Earth Systems

- Things that people do to live comfortably can affect the world around them. But they can make choices that reduce their impacts on the land, water, air, and other living things.

Engineering, Technology, and Applications of Science

ETS1.A Defining and Delimiting Engineering Problems

- A situation that people want to change or create can be approached as a problem to be solved through engineering.

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.

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.

- Systems in the natural and designed world have parts that work together.

Next Generation Science Standards

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).

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.

Common Core State Standards English Language Arts - Kindergarten

CCSS does not provide standards for early childhood learning. As with NGSS, PLTW Launch PreK modules offer a scaffold of learning that moves toward kindergarten standards in ELA and Mathematics.

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.2

With prompting and support, retell familiar stories, including key details.

CCSS.ELA-LITERACY.RL.K.3

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

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.

Common Core State Standards Mathematics - Kindergarten

CCSS does not provide standards for early childhood learning. As with NGSS, PLTW Launch PreK modules offer a scaffold of learning that moves toward kindergarten standards in ELA and Mathematics.

Measurement and Data

Describe and compare measurable attributes.

CCSS.MATH.CONTENT.K.MD.A.1

Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object.

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. For example, directly compare the heights of two children and describe one child as taller/shorter.

Mathematical Practices

CCSS.MATH.PRACTICE.MP1

Make sense of problems and persevere in solving them.

CCSS.MATH.PRACTICE.MP5

Use appropriate tools strategically.

References

Early Childhood Learning & Knowledge Center. (n.d.). *Head Start early learning outcomes framework: Ages birth to five.* https://eclkc.ohs.acf.hhs.gov/interactive-head-start-early-learning-outcomes-framework-ages-birth-five

National Association for the Education of Young Children. (2017). *NAEYC early learning program standards*. https://www.naeyc.org/accreditation/earlylearning/standards

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.