Arizona Science Standards - Kindergarten

Three Dimensions of Science

Sensemaking in science occurs with the integration of three essential dimensions.

Science and Engineering Practices

- ask questions and define problems
- develop and use models
- plan and carry out investigations
- analyze and interpret data
- use mathematics and computational thinking
- construct explanations and design solutions
- engage in argument from evidence
- obtain, evaluate, and communicate information

Crosscutting Concepts

- patterns
- cause and effect
- structure and function
- systems and system models
- stability and change
- scale, proportion, and quantity
- energy and matter

Core Ideas

Core Ideas for Knowing Science

Physical Science

P1: All matter in the Universe is made of very small particles.

P2: Objects can affect other objects at a distance.

P3: Changing the movement of an object requires a net force to be acting on it.

P4: The total amount of energy in a closed system is always the same but can be transferred from one energy store to another during an event.

Earth and Space Science

E1: The composition of the Earth and its atmosphere and the natural and human processes occurring within them shape the Earth's surface and its climate.

E2: The Earth and our solar system are a very small part of one of many galaxies within the Universe.

Life Science

L1: Organisms are organized on a cellular basis and have a finite life span.

L2: Organisms require a supply of energy and materials for which they often depend on, or compete with, other organisms.

L3: Genetic information is passed down from one generation of organisms to another.

L4: The unity and diversity of organisms, living and extinct, is the result of evolution.

Core Ideas for Using Science

U1: Scientists explain phenomena using evidence obtained from observations and or scientific investigations. Evidence may lead to developing models and or theories to make sense of phenomena. As new evidence is discovered, models and theories can be revised.

U2: The knowledge produced by science is used in engineering and technologies to solve problems and/or create products.

U3: Applications of science often have both positive and negative ethical, social, economic, and/or political implications.

Physical Science Standards

Students explore how their senses can detect light, sound, and vibration and how technology can be used to extend their senses.

K.P2U1.1	Investigate how senses can detect light, sound, and vibrations even when they come from far away; use the collected evidence to develop and support an explanation.
K.P2U2.2	Design and evaluate a tool that helps people extend their senses.

Earth and Space Science Standards

Students develop an understanding of patterns to understand changes in local weather, seasonal cycles, and daylight.

K.E1U1.3	Observe, record, and ask questions about temperature, precipitation, and other weather data to identify patterns or changes in local weather.
K.E1U1.4	Observe, describe, ask questions, and predict seasonal weather patterns; and how those patterns impact plants and animals (including humans).
K.E2U1.5	Observe and ask questions about patterns of the motion of the sun, moon, and stars in the sky.

Life Science Standards

Students develop an understanding that the world is comprised of living and non-living things. They investigate the relationship between structure and function in living things; plants and animals use specialized parts to help them meet their needs and survive.

K.L1U1.6	Obtain, evaluate, and communicate information about how organisms use different body parts for survival.
K.L1U1.7	Observe, ask questions, and explain how specialized structures found on a variety of plants and animals (including humans) help them sense and respond to their environment.
K.L2U1.8	Observe, ask questions, and explain the differences between the characteristics of living and non-living things.

Key Crosscutting Concepts in Kindergarten

***Patterns**; Cause and Effect; Scale, Proportion and Quantity; Systems and System Models; Energy and Matter; **Structure and Function**; Stability and Change*

Phenomena are observable events that can be explained or explored. Science aims to explain the causes of these events, or phenomena, using scientific ideas, concepts, and practices (3-dimensions).

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Released 11/03/2022

Arizona Science Standards - Kindergarten

Core Ideas for Knowing Science: Elements for Physical, Earth & Space, and Life Science Standards

Elements of Physical Science Standards

K.P2U1.1 Investigate how senses can detect light, sound, and vibrations even when they come from far away; use the collected evidence to develop and support an explanation.

- People use their senses to learn about the world around them. Their eyes detect light, their ears detect sound, and they can feel vibrations by touch. (K.P2U2.2)

K.P2U2.2 Design and evaluate a tool that helps people extend their senses.

- People use their senses to learn about the world around them. Their eyes detect light, their ears detect sound, and they can feel vibrations by touch. (K.P2U1.1)
- People also use a variety of devices to communicate (send and receive information) over long distances.

Elements of Earth and Space Science Standards

K.E1U1.3 Observe, record, and ask questions about temperature, precipitation, and other weather data to identify patterns or changes in local weather.

- Weather is the combination of sunlight, wind, snow or rain, and temperature in a particular region at a particular time. People measure these conditions to describe and record the weather and to notice patterns over time. (K.E1U1.4)
- Weather is determined by the conditions and movement of the air.

K.E1U1.4 Observe, describe, ask questions, and predict seasonal weather patterns; and how those patterns impact plants and animals (including humans).

- Weather is the combination of sunlight, wind, snow or rain, and temperature in a particular region at a particular time. People measure these conditions to describe and record the weather and to notice patterns over time. (K.E1U1.3)

K.E2U1.5 Observe and ask questions about patterns of the motion of the sun, moon, and stars in the sky.

- Patterns of the motion of the sun, moon, and stars in the sky can be observed, described, and predicted.

Elements of Life Science Standards

K.L1U1.6 Obtain, evaluate, and communicate information about how organisms use different body parts for survival.

- All organisms have external parts. Different animals use their body parts in different ways to see, hear, grasp objects, protect themselves, move from place to place, and seek, find, and take in food, water, and air. Plants also have different parts (roots, stems, leaves, flowers, fruits) that help them survive, grow, and produce more plants. (K.L1U1.7)

K.L1U1.7 Observe, ask questions, and explain how specialized structures found on a variety of plants and animals (including humans) help them sense and respond to their environment.

- All organisms have external parts. Different animals use their body parts in different ways to see, hear, grasp objects, protect themselves, move from place to place, and seek, find, and take in food, water, and air. Plants also have different parts (roots, stems, leaves, flowers, fruits) that help them survive, grow, and produce more plants. (K.L1U1.6)
- Animals have body parts that capture and convey different kinds of information needed for growth and survival—for example, eyes for light, ears for sounds, and skin for temperature or touch. Animals respond to these inputs with behaviors that help them survive (e.g., find food, run from a predator).

K.L2U1.8 Observe, ask questions, and explain the differences between the characteristics of living and non-living things.

- There is a wide variety of living things, including plants and animals. They are distinguished from non-living things by their ability to move, reproduce, and react to certain stimuli.

The elements are not to be used as a check-off list, but rather a useful tool to help educators identify the specific pieces of knowledge and skill that make up the practice, crosscutting concept, or core idea at that grade-band.

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Released 11/03/2022