

SCIENCE – UNIFYING STANDARDS

THE NATURE OF SCIENCE

- 1.0 **Research and Investigation:** Students understand that science is a way of learning about the natural world. They use scientific inquiry and develop ideas based on data collected from investigations they design.
- 2.0 **Communication:** Students understand that the universe can be described by principles derived through scientific inquiry. They effectively communicate their understanding of ideas developed in scientific investigation through a variety of media.
- 3.0 **Connections and Implications:** Students review the consequences of the process and products of scientific inquiry. They understand the role that scientific advances have had throughout history.

EARTH SCIENCE

- 1.0 **Characteristics of the Universe:** Students understand Earth-based and space-based astronomy reveals the structure, scale, and dynamic nature of the solar system, stars, galaxies, and the universe.
- 2.0 **The Dynamic Earth:** Students understand that the Earth is constantly changing and being shaped due to a variety of natural events, processes, and human activity. The Earth is a collection of interacting cycles, structures, and processes that can be described in terms of space, time, energy, and matter.

LIFE SCIENCE

- 1.0 **Diversity and Interdependence:** Students understand that living things are diverse and interdependent. They recognize the relationship between cooperation and competition among organisms in ecosystems.
- 2.0 **Cellular Structures and Functions:** Students understand that cells are the basic structures of all living systems. They understand the complementary relationship between the structure and function of cells, organs, organ systems, whole organisms, and ecosystems.
- 3.0 **Change and Evolution:** Students understand that living things grow, develop, change, and evolve through time, depending on environmental influences. They know that traits of species can change through generations and that instruction of traits is contained in the genetic material of organisms.

PHYSICAL SCIENCE

- 1.0 **Forces and Motion:** Students understand the nature of forces and the relationship between forces and motion. They recognize that the relationship is described by one set of laws. They understand that all matter is in motion and that motion changes as a result of forces between matter. They realize that these forces affect everyday life, and that the effects can be identified, measured, and predicted.
- 2.0 **Energy, Momentum and Transformation:** Students understand that when matter interacts with matter, energy and momentum can be transferred or distributed, and that energy may be transformed. When matter interacts the total amount of matter, energy, and momentum remain the same.
- 3.0 **Structure and Properties of Matter:** Students understand that all matter is made up of particles. They understand the relationship between the structure and properties of matter. They know that a finite number of basic elements combine in various ways which determine all properties, characteristics, and behaviors of matter.

THE NATURE OF SCIENCE Level Kindergarten

1.0 Research and Investigation: Students understand that science is a way of learning about the natural world. They use scientific inquiry and develop ideas based on data collected from investigations they design.

Focus Goals

1.1 Use the five senses to gather scientific information.

2.0 Communication: Students understand that the universe can be described by principles derived through scientific inquiry. They effectively communicate their understanding of ideas developed in scientific investigation through a variety of media.

Focus Goals

2.1 Demonstrate scientific understanding orally and in pictures.

3.0 Connections and Implications: Students review the consequences of the process and products of scientific inquiry. They understand the role that scientific advances have had throughout history.

Focus Goals

2.1 Begin to recognize how science affects daily life.

2.2 Apply Literacy skills to make scientific connections.

THE NATURE OF SCIENCE Level Kindergarten

1.0 Research and Investigation: Students understand that science is a way of learning about the natural world. They use scientific inquiry and develop ideas based on data collected from investigations they design.

1.1 Use the five senses to gather scientific information.

- o Observe common objects using the five senses. (c4a/n/p)
- o Compare and sort common objects based on one physical attribute (including color, shape, texture, size, and weight). (c4d/n/p)

2.0 Communication: Students understand that the universe can be described by principles derived through scientific inquiry. They effectively communicate their understanding of ideas developed in scientific investigation through a variety of media.

2.1 Demonstrate scientific understanding orally and in pictures.

- o Communicate observations orally and in drawings. (c4e/n/p)
- o Describe the properties of common objects. (c4b/n/p)
- o Describe the relative position of objects using one reference (e.g., above or below). (c4c/n)

3.0 Connections and Implications: Students review the consequences of the process and products of scientific inquiry. They understand the role that scientific advances have had throughout history.

3.1 Begin to recognize how science affects daily life. (p)

- o Identify how science can be observed at home and at school. (*)

3.2 Apply Literacy skills to make scientific connections. (p)

- o Read and view informational science material and grade level text. (R-2.0)
- o Learn science vocabulary through viewing and discussions. (R-1.0)
- o Begin to use technology and reference sources to locate information on science topics. (W-3.0)
- o Dictate stories that reflect knowledge of science. (W-2.0)

EARTH SCIENCE
Level Kindergarten

1.0 Characteristics of the Universe: Students understand Earth-based and space-based astronomy reveals the structure, scale, and dynamic nature of the solar system, stars, galaxies, and the universe.

Focus Goals

1.0 Not addressed at this level.

2.0 The Dynamic Earth: Students understand that the Earth is constantly changing and being shaped due to a variety of natural events, processes, and human activity. The Earth is a collection of interacting cycles, structures, and processes that can be described in terms of space, time, energy, and matter.

Focus Goals

- 2.1 Understand that when the earth rotates, changes occur.
- 2.2 Know that weather affects plants, animals and people.
- 2.3 Understand that the Earth is made of land, air, and water.

**EARTH SCIENCE
Level Kindergarten**

1.0 Characteristics of the Universe: Students understand Earth-based and space-based astronomy reveals the structure, scale, and dynamic nature of the solar system, stars, galaxies, and the universe.

1.0 Not addressed at this level.

2.0 The Dynamic Earth: Students understand that the Earth is constantly changing and being shaped due to a variety of natural events, processes and human activity. The Earth is a collection of interacting cycles, structures, and processes that can be described in terms of space, time, energy, and matter.

2.1 Understand that when the Earth rotates, changes occur. (*)

θ Recognize that the seasons occur in observable patterns.

2.2 Know that weather affects plants, animals and people.

θ Identify how changes in daily weather affect plants, animals and people. (c3b/p)

θ Identify how seasonal changes in weather affect plants, animals and people. (c3b/p)

2.3 Understand that the Earth is made of land, air, and water.

θ Identify characteristics of mountains, rivers, oceans, valleys, deserts, and local landforms. (c3a/p)

θ Identify resources from the Earth that are used in everyday life and explain how they can be conserved. (c3c)

LIFE SCIENCE
Level Kindergarten

4.0 Diversity and Interdependence: Students understand that living things are diverse and interdependent. They recognize the relationship between cooperation and competition among organisms in ecosystems.

Focus Goals

4.1 Recognize that different types of plants and animals inhabit the Earth.

3.0 Cellular Structures and Functions: Students understand that cells are the basic structures of all living systems. They understand the complimentary relationship between the structure and function of cells, organs, organ systems, whole organisms, and ecosystems.

Focus Goals

2.1 Understand that plants and animals are built to perform certain functions.

4.0 Change and Evolution: Students understand that living things grow, develop, change and evolve through time, depending on environmental influences. They know that traits of species can change through generations and that instruction of traits is contained in the genetic material of organisms.

Focus Goals

3.1 Recognize how plants and animals can change over time.

LIFE SCIENCE
Level Kindergarten

1.0 Diversity and Interdependence: Students understand that living things are diverse and interdependent. They recognize the relationship between cooperation and competition among organisms in ecosystems.

1.1 Recognize that different types of plants and animals inhabit the Earth.

- o Observe, compare, and contrast the appearance and behavior of plants and animals (e.g., seed-bearing plants, birds, fish, and insects). (c2a/p)
- o Identify how plants and animals are sometimes portrayed in stories with attributes they do not really have (real versus make believe). (c2b)

2.0 Cellular Structures and Functions: Students understand that cells are the basic structures of all living systems. They understand the complimentary relationship between the structure and function of cells, organs, organ systems, whole organisms, and ecosystems.

2.1 Understand that plants and animals are built to perform certain functions.

- o Identify major structures of common plants and animals (e.g., stems, leaves, roots, arms, wings, and legs) and begin to understand the use of these structures. (c2c/p)

3.0 Change and Evolution: Students understand that living things grow, develop, change and evolve through time, depending on environmental influences. They know that traits of species can change through generations and that instruction of traits is contained in the genetic material of organisms.

3.1 Recognize how plants and animals can change over time. (p)

- o Identify the simple stages of growth in a plant or animal.

PHYSICAL SCIENCE
Level Kindergarten

1.0 Forces and Motion: Students understand the nature of forces and the relationship between forces and motion. They recognize that the relationship is described by one set of laws. They understand that all matter is in motion and that motion changes as a result of forces between matter. They realize that these forces affect everyday life, and that the effects can be identified, measured, and predicted.

Focus Goals

1.0 Not addressed at this level.

2.0 Energy, Momentum and Transformation: Students understand that when matter interacts with matter, energy and momentum can be transferred or distributed, and that energy may be transformed. When matter interacts the total amount of matter, energy, and momentum remain the same.

Focus Goals

2.1 Understand that different forms of energy can be observed.

3.0 Structure and Properties of Matter: Students understand that all matter is made up of particles. They understand the relationship between the structure and properties of matter. They know that a finite number of basic elements combine in various ways which determine all properties, characteristics, and behaviors of matter.

Focus Goals

3.1 Understand that properties of materials can be observed, measured and predicted.

3.2 Recognize the properties of water.

PHYSICAL SCIENCE
Level Kindergarten

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2.1 Understand that different forms of energy can be observed. (p)

- o Understand the nature of light.
- o Analyze the concept of shadows using observation skills.
- o Identify objects that give off light, such as a flashlight.

3.0 Structure and Properties of Matter: Students understand that all matter is made up of particles. They understand the relationship between the structure and properties of matter. They know that a finite number of basic elements combine in various ways which determine all properties, characteristics, and behaviors of matter.

3.1 Understand that properties of materials can be observed, measured and predicted.

- o Describe objects in terms of the materials of which they are made (clay, cloth, paper, etc.). (c1a/n)
- o Describe objects in terms of physical properties (color, size, shape, weight, texture, flexibility, attraction to magnets, floating, and sinking, etc.). (c1a/n)
- o Observe, measure, and predict how something changes. (*)

3.2 Recognize the properties of water.

- o Demonstrate how water can change from one form to another. (clb/n)
- o Explain why water left in an open container evaporates but water in a closed container does not. (clc)