KINDERGARTEN

Goal

Students in kindergarten begin their science studies using their five senses to observe animals, earth materials, weather, and other objects. The class setting should provide a stimulating atmosphere in which students are intellectually challenged to explore the physical world around them. Young students' natural curiosity leads them to investigate the world by observing and manipulating common objects and materials in their environment. Students learn to interpret their observations by collecting data on which they base their scientific explanations. Student learning of all four goals is guided by the unifying concepts of evidence, exploration, and measurement. The following explanations characterize the strands at the kindergarten level.

Nature of Science

The Nature of Science Strand is designed to help students develop an understanding of the human dimensions of science, the nature of scientific thought, and the role of science in society. Science education in kindergarten serves as the earliest foundation for students to experience science in a form that engages them in active construction of ideas and explanations. Young students always have questions about themselves and their world. Science is one way of finding answers to their questions and enabling them to make sense of the natural world. Teaching science as inquiry increases students' opportunities to develop the abilities to do science. Their natural curiosity leads them to explore the world by observing and manipulating common objects and materials in their environment. They make observations using their senses to collect data and to obtain evidence for their scientific explanations.

Science as Inquiry

Research shows that young students work well in small groups or pairs to construct and share ideas. Students in kindergarten should employ simple equipment and tools to gather data and extend their senses. Students develop simple skills such as how to observe, measure using(non-standard)units, use numbers, sort (using own rules) cut, connect, switch, turn on and off, pour, hold, tie, and hook.

They begin to ask questions that they can answer with scientific knowledge combined with their own observations and simple predictions. In the earliest years, investigations are largely based on systematic observations. Through the observation and manipulation of common objects students reflect on their similarities and differences. This leads to simple sketches and single-word descriptions which in turn lead to increasingly more detailed drawings, richer verbal descriptions, and connections to writing.

Science and Technology

Young students' abilities in technological problem-solving can be developed by first hand experiences in doing tasks with a technological purpose. They can study technological products and systems in their world, such as zippers, coat hooks, can openers, tricycles and other tools. Students can engage in projects that are appropriately challenging for their developmental level, ones in which they must design ways to connect, move, or communicate.

Personal and Social Perspectives

Students in kindergarten should have a variety of experiences that provide initial understandings for personal care and that enable them to take responsibility for their own health. Student understandings should include following safety rules for all their school experiences as well as at home, preventing abuse and neglect, avoiding injury, and when and how to say no.

Science – Kindergarten

The focus for kindergarten students is on using the five senses to make observations of events in both indoor and outdoor settings that make up their world. The observations that students make provide evidence and data on which to base their scientific explanations. Guide student learning of all goals on the unifying concepts of evidence, explanation, and measurement. The strands provide a context for teaching the content throughout all goals.

Strands: Nature of Science, Science as Inquiry, Science and Technology, Science in Personal and Social Perspectives

COMPETENCY GOAL 1: The learner will make observations and build an understanding of similarities and differences in animals.

Objectives

1.01 Observe and describe the similarities and differences among animals including:
- Structure.
- Growth.
- Changes.
- Movement.

1.02 Observe how animals interact with their surroundings.

1.03 Observe the behaviors of several common animals.

1.04 Demonstrate how to care for a variety of animals.

1.05 Observe the similarities of humans to other animals including:
- Basic needs.
- Growth and change.
- Movement.

COMPETENCY GOAL 2: The learner will make observations and build an understanding of weather concepts.

Objectives

2.01 Observe and report daily weather changes throughout the year.

2.02 Identify different weather features including:
- Precipitation.
- Wind.
- Temperature.
- Cloud cover.

2.03 Identify types of precipitation, changes in wind, force, direction and sky conditions.

2.04 Observe and determine the effects of weather on human activities.
2.05 Use common tools to measure weather.

COMPETENCY GOAL 3: The learner will make observations and build an understanding of the properties of common objects.

Objectives

3.01 Observe and describe the properties of different kinds of objects (clay, wood, cloth, paper, other) and how they are used.
3.02 Develop and use a vocabulary associated with the properties of materials:
- Color.
- Size.
- Shape.
- Texture.

3.03 Describe how objects look, feel, smell, taste, and sound using their own senses.
3.04 Observe that objects can be described and sorted by their properties.
3.05 Identify some common objects and organisms that are considered to be natural resources in our world.

COMPETENCY GOAL 4: The learner will use appropriate tools and measurements to increase their ability to describe their world.

Objectives

4.01 Describe how tools can be used to make comparisons.
4.02 Observe and describe how various tools and units of measure are useful:
- Scissors.
- Pencils.
- Crayons.
- Paper clips.
- Hammers.

4.03 Use nonstandard units of measure to describe and compare objects.
4.04 Demonstrate the use of standard units of measure and compare with nonstandard units of measure. (Teacher demonstration)
4.05 Demonstrate that standard units of measure produce more consistent results than nonstandard units, allowing information to be shared.(Teacher demonstration)