



# Curriculum Guide for Kindergarten SDP Science Teachers



Please note: Pennsylvania & Next Generation Science Standards as well as Instructional Resources are found on the SDP Curriculum Engine

# **K Grade Science Curriculum Term 1 (9/5-11/13/17)**

**Topic:** Using the 5 Senses



Duration: 5 Weeks

**Performance Objectives**

**SWBAT:**

- identify each of the five senses and their related body part **IOT** observe, describe, and sort objects and situations.
- utilize their five senses **IOT** describe daily weather.

## **Key Terms and Definitions**

**observe** - To use one of your five senses to describe something

**describe** - Using the senses to explain what something is like

**sort**- To put things that have something in common into groups

**sight**- What you can observe with your eyes

**hearing**- What you can observe with your ears

**smell**- What you can observe with your nose

**taste**- What you can observe with your tongue

**touch**- What you can observe with your skin

## **Essential Questions**

What are the five senses?

What part of the body do we use to see/ear/smell/touch/taste?

What properties can we observe with our eyes/ears/nose/tongue/fingers?

How can we sort these items using the five senses?

How can you describe the weather using your senses?

## **Starting Points**

Prior to kindergarten, students will be seeing, touching, tasting, smelling and hearing, but may not understand these concepts as a way to observe and describe objects and experiences. In order for kindergarten students to be able to investigate concepts in science, students will focus on understanding their five senses as a way to observe, describe, and sort. Students will be able to identify the five senses and their related body part. Students will be able to understand that objects have properties that can be observed by their five senses. Examples include, size, shape, weight, color, texture, and transparency. Using the five senses and simple measuring tools, students will be able to distinguish and describe similarities and differences in objects, both living and nonliving things through the use of drawings and oral language. They will be able to sort them into groups based on size, weight, shape, or color.

**Topic:** Observing and Predicting the Weather

Duration: 4 Weeks

## Performance Objectives

### SWBAT:

- utilize their five senses **IOT** describe daily weather.
- use weather clues **IOT** predict the weather.
- understand the importance of weather forecasting **IOT** plan daily life events.
- use and share observations of local weather conditions **IOT** to describe patterns over time.
- make observations **IOT** determine the effect of sunlight on the Earth's surface.
- use tools and materials **IOT** design and build a structure that will reduce (or increase) the warming effect of sunlight on an area.
- use a simple thermometer, rain gauge, and wind gauge **IOT** to measure temperature, precipitation, and wind strength and direction

## Key Terms and Definitions

**weather-** The combination of sunlight, wind, snow or rain, and temperature in a particular region at a particular time

**sunny-** When the sun is not covered by clouds

**rainy-** When it is raining

**cloudy-**When the sky is filled with clouds

**partly cloudy-** When there are clouds in the sky but there is also some sun

**windy-** When the wind can be felt blowing

**foggy-** When the clouds are low to the ground and cause visibility to decrease

**snowy-** When snow is falling from the sky

**changes-** When the weather differences each day can be compared

**temperature-** How hot or cold it feels and is measured in degrees

**wind-** Movement of the air

**precipitation-** Any form of water that falls from the sky (examples: rain, snow, hail, sleet)

**storms-** Bad weather (examples: thunderstorms, snow storms, extreme wind, etc.)

**weather-** The condition of the climate outside (hot, cold, rainy, sunny, humid, etc.)

**thermometer-** A tool used to measure the temperature

## Essential Questions

What is the weather like outside?

How does the weather affect our daily decisions?

How can you describe the weather using your senses?

What are the predictable patterns caused by different objects in the solar system? How do objects in the universe appear and behave?

How and why is Earth constantly changing?

What is the effect of sunlight on the Earth's surface?

## **Starting Points**

Young children are naturally curious and they will have made numerous observations about weather by the time they reach kindergarten. However, they may not be able to organize those observations or attach appropriate language to their observing. In this section, we will begin by encouraging students to share what they already know about weather and its effect on people's daily lives. Students will use their five senses to observe daily weather. Students will identify daily weather conditions and that weather is characterized by temperature, wind, and precipitation. They will learn that weather changes every day and that there are different seasons. Classes will record and graph daily weather. Students will be able to give examples of how weather affects people's daily activities. Students will be able to use clues in order to make predictions.

## **K Grade Science Curriculum Term 2 (11/18-1/29/18)**

**Topic:** Living and Non-Living Things



**Duration:** 9-10 Weeks

**Performance Objectives**

**SWBAT:**

- use their five senses **IOT** describe living and nonliving things.
- use the scientific method **IOT** ask questions about living and nonliving things.
- observe plants and trees during the fall **IOT** see that living things can die, which is called once living.
- observe the weather **IOT** see how it affects living and nonliving things.
- investigate living things **IOT** observe that all living things need food, water, air, and a place to grow.
- observe offspring and various living things **IOT** gain a better understanding of one of the four specific characteristics of living things.
- understand the difference between manmade and natural **IOT** classify nonliving things into groups.
- use their observations **IOT** sort living and once living into groups.
- compare and contrast living and nonliving **IOT** separate and sort them into groups.
- use observations **IOT** describe what animals and plants need to survive.
- use a model **IOT** explain the relationship between the needs of different plants or animals and the places they live.

### **Key Terms and Definitions**

**characteristic-** A special quality or trait that makes a person, thing, or group different from others

**animal-** A living thing that is not a human being or a plant (Example: dogs, rabbits, bears, etc.)

**energy**- The ability to do work

**environment**- All of the conditions that affect a living thing

**living**- Things that need food, water, air, and a place to live and grow (Example: humans, plants, animals, etc.)

**nonliving**- Something that does NOT need food, water, air, and a place to live and grow  
(Examples: rocks, clothes, cars, etc.)

**offspring**- To make another living thing of the same kind; children or young from a living thing

**plant**- A living thing such as a tree or a flower that needs water, air, and the sun to grow from the ground

**reproduce**- The process that produces babies, young animals, and new plants

**grow**- To get bigger

**once living**- Things that were once living, but are no longer living (dead)

**survive**- To remain alive, to continue to live

**model**- A representation of something (sometimes on a smaller scale)

**relationship**- The way in which two or more things are connected

**needs**- The things necessary for survival

**habitat**- The natural home or environment of an animal, plant, or other organism

**organism**- An individual animal, plant, or other living thing

**environment**- The surroundings or conditions in which a person, animal, or plant lives

## Essential Questions

What makes something once living?

How do scientists find out about objects, living things, events, and phenomena?

How are living things different from non-living things?

How do the parts of living things help them survive?

In what ways can we sort living things?

In what ways can we sort nonliving things?

## Starting Points

In the first quarter, students learned how to think and observe like a scientist using their five senses to make observations. In this quarter, students will use these skills they learned to compare and contrast living things to nonliving things. Students will be able to understand that all living things need food, water, air, and a place to live and grow. This quarter will explain the needs and characteristics that all living things share and guide students as they discover the differences between living and nonliving things. By the end of this quarter, students will be able to identify the four specific characteristics that make something living which are: living things are made up of parts, living things use energy to grow, living things respond to their environment, and living things reproduce. With this being said, students will also be able to identify things that were once living, but are no longer living. Once the students understand living, nonliving, and once living, they will be able to sort and group things based on common characteristics such as where they grow/ live, the food they eat, size, etc. They will be able to do the same for non-living things, such as sorting them based on naturally made or man-made. Finally, students will be able to observe the effects of weather on living and nonliving things.

## **K Grade Science Curriculum Term 3 (1/30-4/9/18)**

**Topic:** Life Cycle of Animals



Duration: 9-10 Weeks

**Performance Objectives**

**SWBAT:**

- identify the basic needs of organisms **IOT** list things they need to live and thrive.
- observe and compare the different structures of various animals such as wings, legs, and fins **IOT** identify how it helps them move, eat, and survive.
- recognize observable physical attributes **IOT** sort living organisms into groups
- recognize that living things have offspring **IOT** compare and contrast the offspring to their parents and that offspring closely resembles its parents: (Examples: Dogs /puppies, cats/kittens, cows/ calves, ducks/ducklings, frogs/tadpoles)
- observe physical animal characteristics that are influenced by changing environmental conditions **IOT** explain why some animals have thicker fur, lighter fur, etc.
- observe nest building, hibernation, migration, etc. **IOT** explain some animal behaviors are influenced by environmental conditions.
- use observation skills to describe similarities and differences in the appearance of animals **IOT** classify different groups of animals. (Examples: size, shape, body coverings)
- observe various animals **IOT** distinguish similarities and differences in how animals grow and behave
- use their five senses **IOT** identify and label major structures of animals such as arms, wings, legs, beaks, and claws.
- observe different animal's needs **IOT** compare and understand the difference in various habitats of animals.
- observe animals and understand how they reproduce **IOT** sequence the life cycle.
- identify changes in animals throughout the year **IOT** explain how seasons affect animals

### **Key Terms and Definitions**

**behavior-** How something acts and behaves

**energy-** The ability to do work

**habitat-** A place where plants and animals can meet their needs

**hibernate-** An animal that spends time in the winter completely inactive

**invertebrate-** Animals that do not have backbones

**life cycle-** Different stages of life of a living organism (Example: baby, child, adult)

**migrate-** The periodic passage of groups of animals (especially birds or fishes) from one region to another for feeding or breeding

**needs-** Something that an animals must have in order to survive. (Example: food, water, shelter, etc.)

**offspring-** The young of an animal or plant

**reproduce-** When animals and plants make new living things. (Example: two parents make a baby)

**respond-** How an animal acts when something happens.

**shelter-** A place that gives protection from bad weather and/or danger

**similarities-** The ways that two or more things are the same

**vertebrate-** A living thing that has a backbone

## Essential Questions

In what ways do animals depend on other animals and plants?

What do animals need to survive?

How can studying the physical features of an animal help us predict how that feature is used by the animal?

In what ways are life cycles alike? In what ways are they different?

Why do offspring generally look like their parents?

Why do offspring differ from their parents?

Why is it important to know about the unique structures and behaviors of animals?

How do animals and plants change and grow throughout their lives?

What features does a (i.e., frog, tadpole) have that allow it to live (i.e., on land, in water)?

Describe the similarities and differences between two animal life cycles.

## Starting Points

In the previous quarters, students learned how to think and observe like a scientist using their five senses to make observations about living and nonliving things in order to compare and contrast similarities and differences. In this quarter, students will use the skills and information they learned to better understand the life cycle of animals. Students will be able to understand that all animals are living things that have needs, reproduce, respond to their environment, and are made up of different parts. Students will learn about different kinds of animals and the language used to describe animals and how they grow. In this unit, students will study the stages that make up the life cycle of living things. Students will make models of these life cycle stages in order to better understand them. Students will be able to understand why certain animals live in different locations based on their needs.

## K Grade Science Curriculum Term 4 (4/10-6/15/18)

**Topic:** Life Cycle of Plants/Trees



Duration: 9-10 Weeks

### Performance Objectives

#### SWBAT:

- identify the stages of various plant life cycles **IOT** construct a model of their life cycle.
- identify the parts of a plant and tree **IOT** construct or draw a model of them.
- observe different types of leaves **IOT** compare and contrast their shape and size.
- identify ways that animals depend on trees for food or shelter **IOT** understand the important role plants play in our world.
- identify the parts of a plant **IOT** understand how plants get their nutrients and grow.

- distinguish between trees that lose their leaves and trees that do not IOT model trees through the four seasons.

## **Key Terms and Definitions**

**energy-** The ability to do work

**life cycle-** Different stages of life of a living organism (example: baby, child, adult)

**nutrients-** Something that provides food necessary for growth

**parts-** A piece that makes up a whole thing

**roots-** Part of the plant that holds the plant in the ground (under ground)

**stem-** Part of the plant that helps it move food (above ground)

**leaf-** Part of the plant that makes the food (above ground)

**tree-** A plant having a permanently woody main stem or trunk, ordinarily growing to a considerable height, and usually developing branches at some distance from the ground

## **Essential Questions**

What are the basic needs of plants to help it through the different stages of its life cycle?

What are the part of a plant and their functions?

What do all plants have in common?

How are the life cycles of two given living things similar and different?

How do the roots and stems work together to help the plant grow?

How are the leaves from different trees similar and different from each other? How can we use this information to classify different trees?

How do some trees change throughout the four seasons?

## **Starting Points**

In the previous quarters, students learned how to think and observe like a scientist using their five senses. They used these senses to make observations about living and nonliving things in order to compare and contrast similarities and differences. In quarter 4, students will use the skills and information they learned to better understand the life cycle of plants. Students will be able to understand that all plants are living things that have needs, reproduce, respond to their environment, and are made up of different parts. Students will need to know that plants are made up of three parts that all have a specific function. (Roots- Roots have tiny “hairs” that extend into the soil to take in water and nutrients and keep the plant in the ground. Stem- tubes in the stems carry water and nutrients from the roots to the plant’s leaves. Leaves- The green leaves of plants absorb light energy from the Sun. The plant uses this energy to make food) Students will learn about different kinds of plants and the language used to describe plants and how they grow. In this unit, students will study the stages that make up the life cycle of plants and trees and will make models of these life cycle stages in order to better understand them. Students will be able to understand why certain plants live in different locations based on their needs. Students will also have the opportunity to plant plants and watch them go through the different life cycles.