

Kindergarten Science

Course Description (Storyline):

The performance expectations in kindergarten help students formulate answers to questions such as: “What happens if you push or pull an object harder? Where do animals live and why do they live there? What is the weather like today and how is it different from yesterday?” Students are expected to develop understanding of patterns and variations in local weather and the purpose of weather forecasting to prepare for, and respond to, severe weather. Students are able to apply an understanding of the effects of different strengths or different directions of pushes and pulls on the motion of an object to analyze a design solution. Students are also expected to develop understanding of what plants and animals (including humans) need to survive and the relationship between their needs and where they live. The crosscutting concepts of patterns; cause and effect; systems and system models; interdependence of science, engineering, and technology; and influence of engineering, technology, and science on society and the natural world are called out as organizing concepts for these disciplinary core ideas. In the kindergarten performance expectations, students are expected to demonstrate grade-appropriate proficiency in asking questions, developing and using models, planning and carrying out investigations, analyzing and interpreting data, designing solutions, engaging in argument from evidence, and obtaining, evaluating, and communicating information. Students are expected to use these practices to demonstrate understanding of the core ideas.

Course Rationale:

Knowledge of science, as well as engineering and technology (as stated in the Next Generation Science Standards), is critical in preparing all students for higher education and jobs of the future as well as becoming informed, voting citizens. In addition, students need to gain substance in reading, writing, and figuring math solutions which allows for natural integration within the sciences. It is of critical importance to instill a high interest and knowledge of science so all students can succeed in a technologically advanced, global society whether they choose to pursue college or the workforce upon graduation.

Course Curriculum Map:

Appendix – kindergarten scope and sequence

Course Materials and Resources:

- Pearson Interactive Science Edition + Digital Courseware 7 year license-1,500 (400 free/1,100 paid)
- Teacher Edition Package-60 free
- Leveled Reader Library-60 sets (30 free/30 paid)

- Science Activity Card Set 60 free
- STEM Activity Book 60 free
- Readers Theater Book 60 free
- Science Song and Coloring Book-60 free
- Multi-Disciplinary Center Flip Chart-60 free
- Multi-Disciplinary Center Flip Chart Teacher Addition-60 free
- Untamed Science DVD-60 free
- Science Songs CD free
- Science Leveled Reader Database Teacher Access Pack grade k – 5- 60 free
- Science Flipchart-60 free
- Science Vocabulary Cards-60 free

1st Quarter

Unit A – Science, Engineering, and Technology

Chapter 1 – The Nature of Science Big Question – What is science? Prerequisite Skill
Introduction – <i>Why is she looking so closely?</i>
Lesson 1 – <i>What questions can you ask?</i> - Students will tell about working together to ask and answer questions.
Lesson 2 – <i>How do you observe?</i> – Students will explain that we observe by using the senses.
Lesson 3 – <i>How do you learn together?</i> – Students will tell that children can learn together as they conduct fair tests.
Lesson 4 – <i>How do you share what you learn?</i> – Students will identify ways to record and share information about observations and tests.
Lesson 5 – <i>What do you use to observe?</i> – Students will tell how to use tools to observe and collect data.
Lesson 6 – <i>How do you stay safe?</i> – Students will identify how using tools and following rules help children stay safe.
Supplemental Materials: <ul style="list-style-type: none">• Picture cards for “My Five Senses”• Vocabulary cards for “My Five Senses” – scientists, observe, predict, record, compare, sight, smell, taste, hearing, touch• Experiments for “Thinking like a Scientist”• “What Does a Scientist Do?” PowerPoint• “My Five Senses” PowerPoint

Chapter 2 – Solve Problems Big Question – How can you solve problems? Prerequisite Skill
Introduction – <i>What can this object do?</i>
Lesson 1 – <i>What problem can you solve?</i> – Students will identify a problem and a design and materials for solving it.
Lesson 2 – <i>How can you make a plan?</i> – Students will note that one can draw and plan, create, and test solutions.
Lesson 3 – <i>How can you share your ideas with others?</i> – Students will explain that solutions can be shared in different ways.

2nd Quarter

Unit B – Life Science

Chapter 3 – Living and Non-living Things Big question – What can you tell about living things? K-LS1 – 1, K-ESS2-2, K-ESS3-1
Introduction – <i>Which is living?</i>
Lesson 1 – <i>What are nonliving things?</i> – Students will identify non-living things.
Lesson 2 – <i>What are living things?</i> – Students will identify living things.
Lesson 3 – <i>What do living things need?</i> – Students will identify the needs of living things.
Lesson 4 – <i>How are animals alike and different?</i> – Students will tell some ways that animals are alike and different.
Lesson 5 – <i>How are plants alike and different?</i> – Students will tell some ways plants are alike and different.
Supplemental Materials: <ul style="list-style-type: none">• Picture cards for “Living and Non-living”• Vocabulary cards for “Living and Non-living” – living, non-living, sort, classify• Vocabulary cards for “Plants and Animals” – shelter, water, air, light, food, survive, needs, roots, trunk, stem, branches, flowers, leaves, seed, sprout, plant• “Living or Non-Living PowerPoint

Chapter 4 – Plants and Animals Big question – How do living things change as they grow? K-LS1-1, K-ESS2-2, K-ESS3-1
Introduction – <i>What are these?</i>
Lesson 1 – <i>How are young animals like their parents?</i> – Students will match young animals with their parents.
Lesson 2 – <i>How do animals change?</i> – Students will describe how animals change as they grow.
Lesson 3 – <i>How do plants change?</i> – Students will tell how plants change as they grow.
Lesson 4 – <i>How do people change?</i> – Students will tell how people change as they grow
Lesson 5 – <i>What are some plants and animals that live on land?</i> – Students will tell about plants and animals that live on land.
Lesson 6 – <i>What are some plants and animals that live in water?</i> – Students will tell about plants and animals that live in water.
Supplemental Materials: <ul style="list-style-type: none">• Vocabulary cards for “Plants and Animals” – shelter, water, air, light, food, survive, needs, habitat, ocean, forest, desert, arctic, life cycle, roots, trunk, stem, branches, flowers, leaves, seed, sprout, plant• Experiments for “Plants and Animals”• “Describing and Comparing Animals” PowerPoint

3rd Quarter**Unit C – Earth Science**

<p>Chapter 5 – Earth and Sky</p> <p>Big question – What are the Earth and the Sky Like?</p> <p>K-PS3-1, K-PS3-2, K-ESS2-1, K-ESS3-2, K-ESS3-3</p>
Introduction – <i>Is it night or day?</i>
Lesson 1 – <i>What makes up Earth?</i> – Students will tell about water and land covering the Earth.
Lesson 2 – <i>What can you see in the day sky?</i> – Students will tell when the sun, clouds, and moon can be seen in the sky.
Lesson 3 – <i>How does the sun seem to move?</i> – Students will tell where the sun is in the sky at different times of the day.
Lesson 4 – <i>What can you see in the night sky?</i> – Students will tell when the moon, clouds, and stars can be seen in the sky.
Lesson 5 – <i>What are some kinds of weather?</i> – Students will describe and record weather.
Lesson 6 – <i>What are the seasons?</i> – Students will identify weather patterns of the seasons.
Supplement for weather instruction
Supplement for instruction on reducing human impact on the Earth (recycling, reusing).
<p>Supplemental Materials:</p> <ul style="list-style-type: none"> • Picture cards for “Identifying the Seasons” • Vocabulary cards for “Weather” – season, spring, summer, fall, winter, temperature, thermometer, rain, sunlight, wind, snow, or storm • Experiments for “Weather” • Lesson ideas and recording sheets for “Weather” and “Recycling”

4th Quarter**Unit D – Physical Science**

<p>Chapter 6 – Objects</p> <p>Big question – What are objects like?</p>
Introduction -
Lesson 1 – <i>What are your five senses?</i> – Students will identify and describe what they observe with the senses.
Lesson 2 – <i>What are objects made of?</i> – Students will describe objects by their composition.
Lesson 3 – <i>What can you tell about objects?</i> – Students will describe objects by their characteristics.
Lesson 4 – <i>How can you sort objects?</i> – Students will sort objects by their characteristics.
Lesson 5 – <i>How can you use objects?</i> – Students will identify and compare ways to use objects based on their characteristics.
Lesson 6 – <i>How is sound made?</i> – Students will identify loud and soft sounds.
Supplemental Materials: <ul style="list-style-type: none"> • Picture cards for “My Five Senses” • Vocabulary cards for “My Five Senses” – scientists, observe, predict, record, compare, sight, smell, taste, hearing, touch • Vocabulary cards for “Structures and Properties of Matter” – color, texture, human-made, natural • Experiments for “Properties of Matter” • “Natural or Human-Made?” PowerPoint
<p>Chapter 7 – Matter and Mixtures</p> <p>Big question – What are matter and mixtures?</p>
Introduction – <i>What is all mixed together?</i>
Lesson 1 – <i>What are solids like?</i> – Students will identify and measure solid objects.
Lesson 2 – <i>What are liquids like?</i> – Students will observe how liquids take the shape of their containers.
Lesson 3 – <i>What are gases like?</i> – Students will tell that gases fill their containers.
Lesson 4 – <i>How can water change?</i> – Students will tell how water changes by freezing, melting, and boiling.
Lesson 5 – <i>What is a mixture?</i> – Students will tell what is in some mixtures.
Supplemental Materials: <ul style="list-style-type: none"> • Picture cards for “My Five Senses” • Vocabulary cards for “My Five Senses” – scientist, observe, predict, record, compare • Vocabulary cards for “Structures and Properties of Matter” – color, texture, solid, liquid, gas, human-made, natural

4th Quarter**Unit D – Physical Science - continued**

Chapter 8 – Motion Big question – What are position and motion? K-PS2-1, K-PS2-2
Introduction – <i>How does the ball move?</i>
Lesson 1 – <i>What can you tell about an object’s position?</i> – Students will use position words to tell where objects are located.
Lesson 2 – <i>What makes objects move?</i> – Students will tell that a push or a pull can change how an object moves.
Lesson 3 – <i>What are some ways that objects move?</i> – Students will order objects by how fast they move.
Lesson 4 – <i>What are magnets?</i> – Students will identify objects a magnet attracts.
Supplemental Materials: <ul style="list-style-type: none">• Experiments for “Energy”