Georgetown County School District

3rd Grade Science Pacing Guide 2015-2016

Overview of South Carolina State Science Standards:

In grades three through five the standards and performance indicators for the science and engineering practices and core science content emphasize students becoming more sophisticated in describing, representing or explaining concepts or ideas. Students use their experiences from structured investigations in kindergarten through grade two to begin planning their own investigations to answer scientific questions. The seven core concepts (patterns; cause and effect; scale, proportion, and quantity; systems and system models; energy and matter; structure and function; and stability and change) are reinforced in the appropriate context of the core science content through hands-on instruction in the classroom.

These academic standards and performance indicators establish the practices and core content that South Carolina's students should know and be able to do by the end of grade three.

The four core areas of the grade three standards include:

- Properties and Changes in Matter
- Energy Transfer – Electricity and Magnetism
- Earth's Materials and Resources
- Environments and Habitats

The eight science and engineering practices describe how students should learn and demonstrate knowledge of the content outlined in the content standards. Engaging in these practices will help students become scientifically literate and astute consumers of scientific information.

Students should engage in scientific and engineering practices as a means to learn about the specific topics identified for their grade level. It is critical that educators understand the Science and Engineering Practices are ***not*** to be taught in isolation. There should ***not*** be a distinct "Inquiry" unit at the beginning of each school year. Rather, the practices need to be employed ***within the content*** for each grade level.

Teachers, schools, and districts should use these standards and indicators to provide a wide variety of learning experiences, materials, and instructional strategies that accommodate a broad range of individual differences. These standards support active engagement in learning. Classrooms will need to be supplied with the materials and equipment necessary to complete scientific investigations.

The academic standards and performance indicators for grade three should be the basis for the development of classroom and grade-level assessments. In addition, these standards and performance indicators will be the basis for the development of items on the state-required South Carolina Palmetto Assessment of State Standards (SC-PASS). Students must demonstrate knowledge of the science and engineering practices and core content ideas in preparation for future learning science learning.

Georgetown County School District

3rd Grade Science Pacing Guide 2015-2016

1st Nine Weeks

Science and Engineering Practices

Scientific investigation should always be done in the context of content knowledge expected at this grade level. The standard describes how students should learn and demonstrate knowledge of the content outlined in the other standards.

Standard 3.P.1: The student will use the science and engineering practices, including the processes and skills of scientific inquiry, to develop understandings of science content.	
3.P.1A Conceptual Understanding: The practices of science and engineering support the development of science concepts, develop the habits of mind that are necessary for scientific thinking, and allow students to engage in science in ways that are similar to those used by scientists and engineers.	
3.P.1A.1	Ask questions that can be (1) answered using scientific investigations or (2) used to refine models, explanations, or designs.
3.P.1A.2	Develop, use, and refine models to (1) understand or represent phenomena, processes, and relationships, (2) test devices or solutions, or (3) communicate ideas to others.
3.P.1A.3	Plan and conduct scientific investigations to answer questions, test predictions and develop explanations: (1) formulate scientific questions and predict possible outcomes, (2) identify materials, procedures, and variables, (3) select and use appropriate tools or instruments to collect qualitative and quantitative data, and (4) record and represent data in an appropriate form. Use appropriate safety procedures.
3.P.1A.4	Analyze and interpret data from observations, measurements, or investigations to understand patterns and meanings.
3.P.1A.5	Use mathematical and computational thinking to (1) express quantitative observations using appropriate English or metric units, (2) collect and analyze data, or (3) understand patterns, trends and relationships.
3.P.1A.6	Construct explanations of phenomena using (1) scientific evidence and models, (2) conclusions from scientific investigations, (3) predictions based on observations and measurements, or (4) data communicated in graphs, tables, or diagrams.
3.P.1A.7	Construct scientific arguments to support claims, explanations, or designs using evidence from observations, data, or informational texts.
3.P.1A.8	Obtain and evaluate informational texts, observations, data collected, or discussions to (1) generate and answer questions, (2) understand phenomena, (3) develop models, or (4) support explanations, claims, or designs. Communicate observations and explanations using the conventions and expectations of oral and written language.
3.P.1B Conceptual Understanding: Technology is any modification to the natural world created to fulfill the wants and needs of humans. The engineering design process involves a series of iterative steps used to solve a problem and often leads to the development of a new or improved technology.	
3.P.1B.1	Construct devices or design solutions to solve specific problems or needs: (1) ask questions to identify problems or needs, (2) ask questions about the criteria and constraints of the devices or solutions, (3) generate and communicate ideas for possible devices or solutions, (4) build and test devices or solutions, (5) determine if the devices or solutions solved the problem and refine the design if needed, and (6) communicate the results.

Physical Science: Properties and Changes in Matter

Standard 3.P.2: The student will demonstrate an understanding of the properties used to classify matter and how heat energy can change matter from one state to another.	
3.P.2A Conceptual Understanding: Matter exists in several different states and is classified based on observable and measurable properties. Matter can be changed from one state to another when heat (thermal energy) is added or removed.	
3.P.2A.1	Analyze and interpret data from observations and measurements to describe and compare the physical properties of matter (including length, mass, temperature, and volume of liquids).
3.P.2A.2	Construct explanations using observations and measurements to describe how matter can be classified as a solid, liquid or gas.
3.P.2A.3	Plan and conduct scientific investigations to determine how changes in heat (increase or decrease) change matter from one state to another (including melting, freezing, condensing, boiling, and evaporating).
3.P.2A.4	Obtain and communicate information to compare how different processes (including burning, friction and electricity) serve as sources of heat energy.
3.P.2A.5	Define problems related to heat transfer and design devices or solutions that facilitate (conductor) or inhibit (insulator) the transfer of heat.

Georgetown County School District

3rd Grade Science Pacing Guide 2015-2016

2nd Nine Weeks

Science and Engineering Practices

Scientific investigation should always be done in the context of content knowledge expected at this grade level. The standard describes how students should learn and demonstrate knowledge of the content outlined in the other standards.

Standard 3.P.1: The student will use the science and engineering practices, including the processes and skills of scientific inquiry, to develop understandings of science content.	
3.P.1A Conceptual Understanding: The practices of science and engineering support the development of science concepts, develop the habits of mind that are necessary for scientific thinking, and allow students to engage in science in ways that are similar to those used by scientists and engineers.	
3.P.1A.1	Ask questions that can be (1) answered using scientific investigations or (2) used to refine models, explanations, or designs.
3.P.1A.2	Develop, use, and refine models to (1) understand or represent phenomena, processes, and relationships, (2) test devices or solutions, or (3) communicate ideas to others.
3.P.1A.3	Plan and conduct scientific investigations to answer questions, test predictions and develop explanations: (1) formulate scientific questions and predict possible outcomes, (2) identify materials, procedures, and variables, (3) select and use appropriate tools or instruments to collect qualitative and quantitative data, and (4) record and represent data in an appropriate form. Use appropriate safety procedures.
3.P.1A.4	Analyze and interpret data from observations, measurements, or investigations to understand patterns and meanings.
3.P.1A.5	Use mathematical and computational thinking to (1) express quantitative observations using appropriate English or metric units, (2) collect and analyze data, or (3) understand patterns, trends and relationships.
3.P.1A.6	Construct explanations of phenomena using (1) scientific evidence and models, (2) conclusions from scientific investigations, (3) predictions based on observations and measurements, or (4) data communicated in graphs, tables, or diagrams.
3.P.1A.7	Construct scientific arguments to support claims, explanations, or designs using evidence from observations, data, or informational texts.
3.P.1A.8	Obtain and evaluate informational texts, observations, data collected, or discussions to (1) generate and answer questions, (2) understand phenomena, (3) develop models, or (4) support explanations, claims, or designs. Communicate observations and explanations using the conventions and expectations of oral and written language.
3.P.1B Conceptual Understanding: Technology is any modification to the natural world created to fulfill the wants and needs of humans. The engineering design process involves a series of iterative steps used to solve a problem and often leads to the development of a new or improved technology.	
3.P.1B.1	Construct devices or design solutions to solve specific problems or needs: (1) ask questions to identify problems or needs, (2) ask questions about the criteria and constraints of the devices or solutions, (3) generate and communicate ideas for possible devices or solutions, (4) build and test devices or solutions, (5) determine if the devices or solutions solved the problem and refine the design if needed, and (6) communicate the results.

2nd Nine Weeks, cont.

Physical Science: Energy Transfer – Electricity and Magnetism

Standard 3.P.3: The student will demonstrate an understanding of how electricity transfers energy and how magnetism can result from electricity.	
3.P.3A Conceptual Understanding: Energy can be transferred from place to place by electric currents. Electric currents flowing through a simple circuit can be used to produce motion, sound, heat, or light. Some materials allow electricity to flow through a circuit and some do not.	
3.P.3A.1	Obtain and communicate information to develop models showing how electrical energy can be transformed into other forms of energy (including motion, sound, heat, or light).
3.P.3A.2	Develop and use models to describe the path of an electric current in a complete simple circuit as it accomplishes a task (such as lighting a bulb or making a sound).
3.P.3A.3	Analyze and interpret data from observations and investigations to classify different materials as either an insulator or conductor of electricity.
3.P.3B Conceptual Understanding: Magnets can exert forces on other magnets or magnetizable materials causing energy transfer between them, even when the objects are not touching. An electromagnet is produced when an electric current passes through a coil of wire wrapped around an iron core. Magnets and electromagnets have unique properties.	
3.P.3B.1	Develop and use models to describe and compare the properties of magnets and electromagnets (including polarity, attraction, repulsion, and strength).
3.P.3B.2	Plan and conduct scientific investigations to determine the factors that affect the strength of an electromagnet.

Georgetown County School District

3rd Grade Science Pacing Guide 2015-2016

3rd Nine Weeks

Science and Engineering Practices

Scientific investigation should always be done in the context of content knowledge expected at this grade level. The standard describes how students should learn and demonstrate knowledge of the content outlined in the other standards.

Standard 3.P.1: The student will use the science and engineering practices, including the processes and skills of scientific inquiry, to develop understandings of science content.	
3.P.1A Conceptual Understanding: The practices of science and engineering support the development of science concepts, develop the habits of mind that are necessary for scientific thinking, and allow students to engage in science in ways that are similar to those used by scientists and engineers.	
3.P.1A.1	Ask questions that can be (1) answered using scientific investigations or (2) used to refine models, explanations, or designs.
3.P.1A.2	Develop, use, and refine models to (1) understand or represent phenomena, processes, and relationships, (2) test devices or solutions, or (3) communicate ideas to others.
3.P.1A.3	Plan and conduct scientific investigations to answer questions, test predictions and develop explanations: (1) formulate scientific questions and predict possible outcomes, (2) identify materials, procedures, and variables, (3) select and use appropriate tools or instruments to collect qualitative and quantitative data, and (4) record and represent data in an appropriate form. Use appropriate safety procedures.
3.P.1A.4	Analyze and interpret data from observations, measurements, or investigations to understand patterns and meanings.
3.P.1A.5	Use mathematical and computational thinking to (1) express quantitative observations using appropriate English or metric units, (2) collect and analyze data, or (3) understand patterns, trends and relationships.
3.P.1A.6	Construct explanations of phenomena using (1) scientific evidence and models, (2) conclusions from scientific investigations, (3) predictions based on observations and measurements, or (4) data communicated in graphs, tables, or diagrams.
3.P.1A.7	Construct scientific arguments to support claims, explanations, or designs using evidence from observations, data, or informational texts.
3.P.1A.8	Obtain and evaluate informational texts, observations, data collected, or discussions to (1) generate and answer questions, (2) understand phenomena, (3) develop models, or (4) support explanations, claims, or designs. Communicate observations and explanations using the conventions and expectations of oral and written language.
3.P.1B Conceptual Understanding: Technology is any modification to the natural world created to fulfill the wants and needs of humans. The engineering design process involves a series of iterative steps used to solve a problem and often leads to the development of a new or improved technology.	
3.P.1B.1	Construct devices or design solutions to solve specific problems or needs: (1) ask questions to identify problems or needs, (2) ask questions about the criteria and constraints of the devices or solutions, (3) generate and communicate ideas for possible devices or solutions, (4) build and test devices or solutions, (5) determine if the devices or solutions solved the problem and refine the design if needed, and (6) communicate the results.

Earth Science: Earth's Materials and Processes

Standard 3.E.4: The student will demonstrate an understanding of the composition of Earth and the processes that shape features of Earth's surface.	
3.E.4A Conceptual Understanding: Earth is made of materials (including rocks, minerals, soil, and water) that have distinct properties. These materials provide resources for human activities.	
3.E.4A.1	Analyze and interpret data from observations and measurements to describe and compare different Earth materials (including rocks, minerals, and soil) and classify each type of material based on its distinct physical properties.
3.E.4A.2	Develop and use models to describe and classify the pattern distribution of land and water features on Earth.
3.E.4A.3	Obtain and communicate information to exemplify how humans obtain, use, and protect renewable and nonrenewable Earth resources.
3.E.4B Conceptual Understanding: Earth's surface has changed over time by natural processes and by human activities Humans can take steps to reduce the impact of these changes.	
3.E.4B.1	Develop and use models to describe the characteristics of Earth's continental landforms and classify landforms as volcanoes, mountains, valleys, canyons, plains, and islands.
3.E.4B.2	Plan and conduct scientific investigations to determine how natural processes (including weathering, erosion, and gravity) shape Earth's surface.
3.E.4B.3	Obtain and communicate information to explain how natural events (such as fires, landslides, earthquakes, volcanic eruptions, or floods) and human activities (such as farming, mining, or building) impact the environment.
3.E.4B.4	Define problems caused by a natural event or human activity and design devices or solutions to reduce the impact on the environment.

Georgetown County School District

3rd Grade Science Pacing Guide 2015-2016

4th Nine Weeks

Science and Engineering Practices

Scientific investigation should always be done in the context of content knowledge expected at this grade level. The standard describes how students should learn and demonstrate knowledge of the content outlined in the other standards.

Standard 3.P.1: The student will use the science and engineering practices, including the processes and skills of scientific inquiry, to develop understandings of science content.	
3.P.1A Conceptual Understanding: The practices of science and engineering support the development of science concepts, develop the habits of mind that are necessary for scientific thinking, and allow students to engage in science in ways that are similar to those used by scientists and engineers.	
3.P.1A.1	Ask questions that can be (1) answered using scientific investigations or (2) used to refine models, explanations, or designs.
3.P.1A.2	Develop, use, and refine models to (1) understand or represent phenomena, processes, and relationships, (2) test devices or solutions, or (3) communicate ideas to others.
3.P.1A.3	Plan and conduct scientific investigations to answer questions, test predictions and develop explanations: (1) formulate scientific questions and predict possible outcomes, (2) identify materials, procedures, and variables, (3) select and use appropriate tools or instruments to collect qualitative and quantitative data, and (4) record and represent data in an appropriate form. Use appropriate safety procedures.
3.P.1A.4	Analyze and interpret data from observations, measurements, or investigations to understand patterns and meanings.
3.P.1A.5	Use mathematical and computational thinking to (1) express quantitative observations using appropriate English or metric units, (2) collect and analyze data, or (3) understand patterns, trends and relationships.
3.P.1A.6	Construct explanations of phenomena using (1) scientific evidence and models, (2) conclusions from scientific investigations, (3) predictions based on observations and measurements, or (4) data communicated in graphs, tables, or diagrams.
3.P.1A.7	Construct scientific arguments to support claims, explanations, or designs using evidence from observations, data, or informational texts.
3.P.1A.8	Obtain and evaluate informational texts, observations, data collected, or discussions to (1) generate and answer questions, (2) understand phenomena, (3) develop models, or (4) support explanations, claims, or designs. Communicate observations and explanations using the conventions and expectations of oral and written language.
3.P.1B Conceptual Understanding: Technology is any modification to the natural world created to fulfill the wants and needs of humans. The engineering design process involves a series of iterative steps used to solve a problem and often leads to the development of a new or improved technology.	
3.P.1B.1	Construct devices or design solutions to solve specific problems or needs: (1) ask questions to identify problems or needs, (2) ask questions about the criteria and constraints of the devices or solutions, (3) generate and communicate ideas for possible devices or solutions, (4) build and test devices or solutions, (5) determine if the devices or solutions solved the problem and refine the design if needed, and (6) communicate the results.

Life Science: Environments and Habitats

Standard 3.L.5: The student will demonstrate an understanding of how the characteristics and changes in environments and habitats affect the diversity of organisms.	
3.L.5A **Conceptual Understanding:** The characteristics of an environment (including physical characteristics, temperature, availability of resources, or the kinds and numbers of organisms present) influence the diversity of organisms that live there. Organisms can survive only in environments where their basic needs are met. All organisms need energy to live and grow. This energy is obtained from food. The role an organism serves in an ecosystem can be described by the way in which it gets its energy.	
3.L.5A.1	Analyze and interpret data about the characteristics of environments (including salt and fresh water, deserts, grasslands, forests, rain forests, and polar lands) to describe how the environment supports a variety of organisms.
3.L.5A.2	Develop and use a food chain model to classify organisms as producers, consumers, and decomposers and to describe how organisms obtain energy.
3.L.5B **Conceptual Understanding**: When the environment or habitat changes, some plants and animals survive and reproduce, some move to new locations, and some die. Fossils can be used to infer characteristics of environments from long ago.	
3.L.5B.1	Obtain and communicate information to explain how changes in habitats (such as those that occur naturally or those caused by organisms) can be beneficial or harmful to the organisms that live there.
3.L.5B.2	Develop and use models to explain how changes in a habitat cause plants and animals to respond in different ways (such as hibernating, migrating, responding to light, death, or extinction).
3.L.5B.3	Construct scientific arguments using evidence from fossils of plants and animals that lived long ago to infer the characteristics of early environments.