

# KINDERGARTEN OVERVIEW

In kindergarten through grade two, the standards and performance indicators for the science and engineering practices and core science content emphasize students making observations and explanations about phenomena they can directly explore and investigate. Student experiences should be structured as they begin to learn the features of a scientific investigation and engage in the practices of science and engineering. 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 kindergarten.

The three core areas of the kindergarten standards include:

- Exploring Organisms and the Environment
- Exploring Weather Patterns
- Exploring Properties of Objects and Materials

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 materials and equipment necessary to complete scientific investigations.

The academic standards and performance indicators for kindergarten should be the basis for the development of classroom and grade-level assessments. Students must demonstrate knowledge of the science and engineering practices and core content ideas in preparation for future learning in science.

## KINDERGARTEN SCIENCE AND ENGINEERING PRACTICES

**NOTE:** Scientific investigations 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 K.S.1:** The student will use the science and engineering practices, including the processes and skills of scientific inquiry, to develop understandings of science content.

**K.S.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.

**Performance Indicators:** Students who demonstrate this understanding can:

**K.S.1A.1** Ask and answer questions about the natural world using explorations, observations, or structured investigations.

**K.S.1A.2** Develop and use models to (1) understand or represent phenomena, processes, and relationships, (2) test devices or solutions, or (3) communicate ideas to others.

**K.S.1A.3** With teacher guidance, conduct structured investigations to answer scientific questions, test predictions and develop explanations: (1) predict possible outcomes, (2) identify materials and follow procedures, (3) use appropriate tools or instruments to make qualitative observations and take nonstandard measurements, and (4) record and represent data in an appropriate form. Use appropriate safety procedures.

**K.S.1A.4** Analyze and interpret data from observations, measurements, or investigations to understand patterns and meanings.

**K.S.1A.5** Use mathematical thinking to (1) recognize and express quantitative observations, (2) collect and analyze data, or (3) understand patterns and relationships.

**K.S.1A.6** Construct explanations of phenomena using (1) student-generated observations and measurements, (2) results of investigations, or (3) data communicated in graphs, tables, or diagrams.

**K.S.1A.7** Construct scientific arguments to support explanations using evidence from observations or data collected.

**K.S.1A.8** Obtain and evaluate informational text then or from observations and data collected.

**KINDERGARTEN**  
**SCIENCE AND ENGINEERING PRACTICES** (*CONTINUED*)

**K.S.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.

**Performance Indicators:** Students who demonstrate this understanding can:

**K.S.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 (6) communicate the results.

**LIFE SCIENCE: E**

**KINDERGARTEN**

**KINDERGARTEN**  
**EARTH SCIENCE: EXPLORING WEATHER PATTERNS**

**Standard K.E.3:** The student will demonstrate an understanding of daily and seasonal weather patterns.

**K.E.3A. Conceptual Understanding:** Weather is a combination of sunlight, wind, snow or rain, and temperature in a particular region at a particular time. Scientists measure weather conditions to describe and record the weather and to notice patterns over time. Plants and animals (including humans) respond to different weather conditions in different ways.

**Performance Indicators:** Students who demonstrate this understanding can:

**K.E.3A.1** Analyze and interpret local weather condition data (including precipitation, wind, temperature, and cloud cover) to describe weather patterns that occur from day to day, using simple graphs and pictorial weather symbols.

**K.E.3A.2** Develop and use models to predict seasonal weather patterns and changes.

**K.E.3A.3** Obtain and communicate information to support claims about how changes in seasons affect plants and animals.

**K.E.3A.4** Define problems caused by the effects of weather on human activities and design solutions or devices to solve the problem.

**KINDERGARTEN**  
**PHYSICAL SCIENCE: EXPLORING PROPERTIES OF OBJECTS AND MATERIALS**

**Standard K.P.4:** The student will demonstrate an understanding of the observable properties of matter.

**K.P.4A. Conceptual Understanding:** Objects can be described and classified by their observable properties, by their uses, and by whether they occur naturally or are manufactured (human-made). Different properties of objects are suited for different purposes.

**Performance Indicators:** Students who demonstrate this understanding can:

**K.P.4A.1** Analyze and interpret data to compare the qualitative properties of objects (such as size, shape, color, texture, weight, flexibility, attraction to magnets, or ability to sink or float) and classify objects based on similar properties.

**K.P.4A.2** Develop and use models to describe and compare the properties of different materials (including wood, plastic, metal, cloth, and paper) and classify materials by their observable properties, by their uses, and by whether they are natural or human-made.

**K.P.4A.3** Conduct