

North Carolina Essential Standards 6-8 Science

Note on Numbering:

Physical Science (P) Earth Science (E) Life Science (L)

The North Carolina Science Essential Standards maintain the respect for local control of each Local Education Authority (LEA) to design the specific curricular and instructional strategies that best deliver the content to their students. Nonetheless, engaging students in inquiry-based instruction is a critical way of developing conceptual understanding of the science content that is vital for success in the twenty-first century. The process of scientific inquiry, experimentation and technological design should not be taught nor tested in isolation of the core concepts drawn from physical science, earth science and life science. A seamless Science as Inquiry

Traditional laboratory experiences provide opportunities to demonstrate how science is constant, historic, probabilistic, and replicable. Although there are no fixed steps that all scientists follow, scientific investigations usually involve collections of relevant evidence, the use of logical reasoning, the application of imagination to devise hypotheses, and explanations to make sense of collected evidence. Student engagement in scientific investigation provides background for understanding the nature of scientific inquiry. In addition, the science process skills necessary for inquiry are acquired through active experience. The process skills support development of reasoning and problem-

Matter: Properties and Change

	Essential Standard	Clarifying Objectives	
6.P.2	Understand the structure, classifications and physical properties of matter.	6.P.2.1	Recognize that all matter is made up of atoms and atoms of the same element are all alike, but are different from the atoms of other elements.
		6.P.2.2	Explain the effect of heat on the motion of atoms through a description of what happens to particles during a change (i)-3()ot3()ot3()

	Essential Standard	Clarifying Objectives	
		6.E.1.3	Summarize space exploration and the understandings gained from them.

Earth Systems, Structures and Processes

	Essential Standard	Clarifying Objectives	
6.E.2	Understand the structure of the		

Energy: Conservation and Transfer

	Essential Standard	Clarifying Objectives	
7.P.2	Understand forms of energy, energy transfer and transformation and conservation in mechanical systems.	7.P.2.1	Explain how kinetic and potential energy contribute to the mechanical energy of an object.
		7.P.2.2	Explain how energy can be transformed from one form to another (specifically potential energy and kinetic energy) using a model or diagram of a moving object (roller coaster, pendulum, or cars on ramps as examples).
		7.P.2.3	Recognize that energy can be transferred from one system to another when two objects push or pull on each other over a distance (work) and electrical circuits require a complete loop through which an electrical current can pass.
		7.P.2.4	Explain how simple machines such as inclined planes, pulleys, levers and wheel and axles are used to create mechanical advantage and increase efficiency.

Earth Systems, Structures and Processes

	Essential Standard	Clarifying Objectives	
7.E.1	Understand how the cycling of matter (water and gases) in and out of the atmosphere relates to Earth's atmosphere, weather and climate and the effects of the atmosphere on humans.	7.E.1.1	Compare the composition, properties and structure of Earth's atmosphere to include: mixtures of gases and differences in temperature and pressure within layers.
		7.E.1.2	Explain how the cycling of water in and out of the atmosphere and atmospheric conditions relate to the weather patterns on Earth.
		7.E.1.3	Explain the relationship between the movement of air masses, high and low pressure systems, and frontal boundaries to storms (including thunderstorms, hurricanes, and tornadoes) and other weather conditions that may result.
		7.E.1.4	Predict weather conditions and patterns based on information obtained from: - Weather data collected from direct observations and measurement (wind speed and direction, air temperature, humidity and air pressure) - Weather maps, satellites and radar - Cloud shapes and types and associated elevation
		7.E.1.5	Explain the influence of convection, global winds and the jet stream on weather and climatic conditions.
		7.E.1.6	Conclude that the good health of humans requires: monitoring the atmosphere, maintaining air quality and stewardship.

Structures and Functions of Living Organisms

	Essential Standard	Clarifying Objectives	
7.L.1	Understand the processes, structures and functions of living organisms that enable them to survive, reproduce and carry out the basic functions of life.	7.L.1.1	Compare the structures and life functions of single-celled organisms that carry out all of the basic functions of life including: • Euglena • Amoeba • Paramecium • Volvox
		7.L.1.2	

Earth Systems, Structures and Processes



