

DoDEA Grade 8 Science Standards

S1: Scientific Inquiry

The student demonstrates abilities necessary to do scientific inquiry and an understanding about scientific inquiry; that is, the student:

- S1a:** develops research questions that can be answered through scientific investigations.
- S1b:** accesses, evaluates and uses information from a variety of reliable scientific sources.
- S1c:** designs, conducts and records scientific investigations following the general procedures of scientific inquiry.
- S1d:** applies appropriate tools and techniques to systematically collect, record, analyze, and interpret data.
- S1e:** develops logical descriptions, explanations, predictions, and models using evidence.
- S1f:** recognizes and analyzes interpretations, conclusions, and predictions based upon alternative evidence and explanations.
- S1g:** communicates scientific procedures, explanations, and conclusions using appropriate scientific language and writing, and mathematics.

S2: History and Nature of Science

The student demonstrates an understanding of science as a human endeavor and the history and nature of science; that is, the student:

- S2a:** cites examples of scientists from diverse backgrounds, and explains how they use scientific habits of mind such as: (reasoning, insight, skill, creativity, intellectual honesty, tolerance for ambiguity, skepticisms, and openness to new ideas) in their work.
- S2b:** explains how scientists formulate and test their explanations, revising when necessary.
- S2c:** investigates and explains how scientists communicate their results and ideas, and describes and identifies situations in which scientists disagree about interpretation of evidence.
- S2d:** examines the effects of science on cultural development and states the relationship between scientific innovation and human history.

S3: Science in Personal and Social Perspectives

The student demonstrates an understanding of safety, natural and human hazards, and their risks and benefits; that is, the student:

- S3a:** demonstrates personal and group safety and resource conservation when engaged in science.
- S3b:** thinks critically and analyzes risks and benefits associated with natural, chemical, biological, and personal hazards.
- S3c:** evaluates the interrelationships of environmental degradation on the global community.

S4: Science and Technology

The student demonstrates an understanding about science and technology and the nature of technological design; that is, the student:

- S4a:** assesses societal challenges that may inspire scientific research.

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S4b: evaluates an invention or design and proposes modifications.

S4c: identifies a technological problem and develops a plan for design, implementation, and evaluation.

S4d: explores how technological risks lead to new technologies and how unintended consequences impact society.

S4e: analyzes how technology responds to societal, political, and economic needs.

S5: Physical Science

The student demonstrates a conceptual understanding of matter, motions and forces, and transfer of energy; that is, the student:

S5a: examines density, boiling point, and chemical reactivity of materials and explains conservation of matter.

S5b: determines and communicates the relationship between motions and forces, including inertia and net effects of balanced and unbalanced forces.

S5c: compares and explains different forms of energy as heat, light, electricity, mechanical motion, sound, and chemical.

S6: Life Science

The student demonstrates a conceptual understanding of the structure and function of living systems, populations and ecosystems, that is, the student:

S6a: applies the concept of system failure to disease in the human organism at the cellular, tissue, organ, and system levels.

S6b: determines and compares the role of heredity and natural selection for survival of human and non-human organisms.

S6c: generalizes how adaptive characteristics of a species (a population) influence their chance for survival or possible extinction.

S7: Earth and Space Sciences

The student demonstrates a conceptual understanding of the Earth's systems and history; that is, the student:

S7a: analyzes and evaluates the impact of constructive and destructive forces on the Earth and its inhabitants over geologic time.

S7b: examines and interprets the Earth's stratigraphic record in relation to constructive and destructive forces.

S7c: compares the Sun to other stars and galaxies.