OREGON DEPARTMENT OF EDUCATION

Standards By Design:

Sixth Grade for Science

Science

Sixth Grade

Sixth grade science students refine their understanding of living and non-living systems as organized groups of related parts that function together, interact, and change. They investigate physical and chemical properties of matter, and energy. They study waves, electricity, and magnetism. Students learn about types, functions, components, relationships, and interactions of cells, tissues, organs, and organ systems, and changes in populations and ecosystems. Students study objects in the solar system, the layers of Earth, and the relationship of the water cycle to landforms and weather. They use their scientific inquiry skills to investigate the natural world through observing, proposing questions or hypotheses, and collecting, analyzing, and interpreting data to produce justifiable evidence-based explanations. Students apply their knowledge of science principles to engineering design by identifying problems, and proposing, testing, and evaluating potential solutions.

*It is essential that these standards be addressed in contexts that promote scientific inquiry, use of evidence, critical thinking, making connections, and communication.

6.1 Structure and Function: Living and non-living systems are organized groups of related parts that function together and have characteristics and properties.

6.1P.1 Describe physical and chemical properties of matter and how they can be measured.

6.1P.2 Compare and contrast the characteristic properties of forms of energy.

6.1L.1 Compare and contrast the types and components of cells. Describe the functions and relative complexity of cells, tissues, organs, and organ systems.

6.1E.1 Describe and compare the properties and composition of the layers of Earth.

6.1E.2 Describe the properties of objects in the solar system. Describe and compare the position of the sun within the solar system, galaxy, and universe.

6.2 Interaction and Change: The related parts within a system interact and change.

6.2P.1 Describe and compare types and properties of waves and explain how they interact with matter.

6.2P.2 Describe the relationships between: electricity and magnetism, static and current electricity, and series and parallel electrical circuits.

Science Numbering Key Example: K.2P.1
K = Grade
2 = Core Standard strand (strands are 1=Structure and Function; 2=Interaction and change; 3=Scientific Inquiry; 4=Engineering Design)
P = Science Discipline (disciplines are P = Physical; L = Life; E = Earth and Space; S = Scientific inquiry; D = Engineering Design)
1 = Number of the content standard for this grade, strand, and discipline

6.2L.1 Describe the relationships and interactions between and among cells, tissues, organs, and organ systems.

6.2L.2 Explain how individual organisms and populations in an ecosystem interact and how changes in populations are related to resources.

6.2E.1 Explain the water cycle and the relationship to landforms and weather.

6.3 Scientific Inquiry: Scientific inquiry is the investigation of the natural world based on observations and science principles that includes proposing questions or hypotheses, and developing procedures for questioning, collecting, analyzing, and interpreting accurate and relevant data to produce justifiable evidence-based explanations.

6.3S.1 Based on observations and science principles, propose questions or hypotheses that can be examined through scientific investigation. Design and conduct an investigation that uses appropriate tools and techniques to collect relevant data.

6.3S.2 Organize and display relevant data, construct an evidence-based explanation of the results of an investigation, and communicate the conclusions.

6.3S.3 Explain why if more than one variable changes at the same time in an investigation, the outcome of the investigation may not be clearly attributable to any one variable.

6.4 Engineering Design: Engineering design is a process of identifying needs, defining problems, developing solutions, and evaluating proposed solutions.

6.4D.1 Define a problem that addresses a need and identify science principles that may be related to possible solutions.

6.4D.2 Design, construct, and test a possible solution to a defined problem using appropriate tools and materials. Evaluate proposed engineering design solutions to the defined problem.

6.4D.3 Describe examples of how engineers have created inventions that address human needs and aspirations.

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