

West Virginia Science Standards

Grades 5-8

As Addressed by Challenger Learning Center's

e-Mission: Space Station Alpha



Standard 1: History and the Nature of Science (SC.S.1)

Students will:

- Demonstrate an understanding of science as a human endeavor encompassing the contributions of diverse cultures and scientists.
- Demonstrate an understanding of the nature of science.

Standard 2: Science as Inquiry (SC.S.2)

Students will:

- Demonstrate the abilities necessary to do scientific inquiry.
- Demonstrate understanding about scientific inquiry.

Standard 3: Unifying Themes (SC.S.3)

Students will:

- Demonstrate the ability to draw conclusions about and predict changes in natural and designed systems.

Standard 4: Science Subject Matter/Concepts (SC.S.4)

Grade 5

Students will:

- Demonstrate knowledge, understanding and applications of scientific facts, concepts, principles, theories, and models as delineated in the objectives.
- Demonstrate an understanding of the interrelationships among physics, chemistry, biology and the Earth and space sciences.
- Apply knowledge, understanding, and skills of science subject matter/concepts to daily life experiences.

Grade 6

Students will:

- Demonstrate knowledge, understanding, and applications of scientific facts, concepts, principles, theories, and models as delineated in the objectives.
- Demonstrate an understanding of the interrelationships among physics, chemistry, biology, and the Earth and space sciences.
- Apply knowledge, understanding and skills of science subject matter/concepts to daily life experiences.

Grade 7

Students will:

- Demonstrate an understanding of the interrelationships among physics, chemistry, biology and the Earth and space sciences.

- Apply knowledge, understanding, and skills of science subject matter/concepts to daily life experiences.

Grade 8

Students will:

- Demonstrate an understanding of the interrelationships among physics, chemistry, biology, and the Earth and space sciences.
- Apply knowledge, understanding, and skills of science subject matter/concepts to daily life experiences.

Standard 5: Science Subject Matter/Concepts Objectives

Grade 5

Structure and Function in Living Systems

SC.5.4.2 Identify and explain common energy conversions in cycles of matter, including photosynthesis and carbon dioxide cycle.

Grade 6

Energy

SC.6.4.17 Investigate the properties of the electromagnetic spectrum (e.g., wavelengths, frequencies, visible light); relate wavelengths and/or frequency to position on electromagnetic spectrum (e.g., colors, x-ray).

SC.6.4.18 Identify factors affecting reflection and refraction (e.g., nature of surfaces, color, density of medium).

Earth and the Solar System

SC.6.4.29 Investigate models of Earth-moon-sun relationships (e.g., gravity, time, tides).

Grade 7

Energy

SC.7.4.19 Define characteristics of light and sound waves and describe how sound is perceived by the ear and light is perceived by the eye.

Earth and the Solar System

SC.7.4.32 Describe and compare the physical characteristics of celestial objects.

SC.7.4.33 Compare the characteristics of the members of our solar system.

Grade 8

SC.8.4.5 Demonstrate how living cells obtain the essentials of life through chemical reactions of transpiration, respiration, and photosynthesis.

Energy

SC.8.4.19 Interpret and illustrate changes in waves as they pass through various mediums (e.g., sound through water and metal, light through thicknesses of glass).

Earth and the Solar System

SC.8.4.31 Recognize societal concerns with exploration and colonization of space.

SC.8.4.32 Diagram the motions of the sun, moon and Earth and explain the phenomena associated with these motions (e.g., glacial periods, eclipses, tides, meteor showers).

Standard 5: Scientific Design and Application (SC.S.5)

Grade 5

Students will:

- Demonstrate an understanding of the interdependence between science and technology.
- Demonstrate abilities of technological design.
- Demonstrate the ability to utilize technology to gather data and communicate designs, results, and conclusions.

Grade 6

Students will:

- Demonstrate an understanding of the interdependence between science and technology.
- Demonstrate the ability to distinguish between natural and manmade objects.
- Demonstrate abilities of technological design.
- Demonstrate the ability to utilize technology to gather data and communicate designs, results, and conclusions.

Grade 7

Students will:

- Demonstrate an understanding of the interdependence between science and technology.
- Demonstrate abilities of technological design.
- Demonstrate the ability to utilize technology to gather data and communicate designs, results, and conclusions.

Grade 8

Students will:

- Demonstrate an understanding of the interdependence between science and technology.
- Demonstrate abilities of technological design.
- Demonstrate the ability to utilize technology to gather data and communicate designs, results, and conclusions.

Scientific Design and Application Objectives

Grade 5

Students will:

SC.5.5.1 Research everyday applications and interactions of science and technology.

SC.5.5.2 Implement engineering solutions for given tasks and measure their effectiveness.

Grade 6

Students will:

SC.6.5.1 Given a set of attributes, produce a product or process and cite how design priorities (e.g., space, safety) and available materials impact the outcome.

SC.6.5.2 Evaluate the appropriateness of the materials and procedures in given engineering solutions.

Grade 7

Students will:

SC.7.5.1 Make and compare different proposed solutions to an identified problem in light of specified criteria.

SC.7.5.2 Test and evaluate different types of materials and/or design approaches in building objects or completing tasks.

Grade 8

Students will:

- Demonstrate an understanding of the interdependence between science and technology.
- Demonstrate abilities of technological design.
- Demonstrate the ability to utilize technology to gather data and communicate designs, results, and conclusions.

Grade 8

Students will:

SC.8.5.1 Research applications of space technology in everyday life (e.g., Velcro, Teflon, weather satellites).

SC.8.5.2 Compare scientific inquiry and technological design processes.

SC.8.5.4 Design and construct engineering solutions to problems according to specified constraints.

Science in Personal and Social Perspectives Objectives

Grade 5

Science in Personal and Social Perspectives Objectives

SC.5.6.4 Explore the connections between science, technology, society, and career opportunities.

Grade 6

Students will:

SC.6.6.4 Explore the connections between science, technology, society, and career opportunities.

Grade 7

SC.7.6.4 Explore the connections between science, technology, society, and career opportunities.

Grade 8

SC.8.6.4 Explore the connections between science, technology, society, and career opportunities.