Standard	Benchmark	Indicators
	By the end of the 6-8 program, students will…	
Earth and Space Sciences Students demonstrate an understanding about how Earth systems and processes interact in the geosphere resulting in the habitability of Earth. This includes demonstrating an understanding of the composition of the universe, the solar system and Earth. In addition, it includes understanding the properties and the interconnected nature of Earth's systems, processes that shape Earth and Earth's history. Students also demonstrate an understanding of how the concepts and principles of energy, matter, motion and forces explain Earth systems, the solar system and the universe. Finally, they grasp an understanding of the historical perspectives, scientific approaches and emerging scientific issues associated with Earth and space sciences.	A. Describe how the positions and motions of the objects in the universe cause predictable and cyclic events. B. Explain that the universe is composed of vast amounts of matter, most of which is at incomprehensible distances and held together by gravitational force. Describe how the universe is studied by the use of equipment such as telescopes, probes, satellites and spacecraft. C. Describe interactions of matter and energy throughout the lithosphere, hydrosphere and atmosphere (e.g., water cycle, weather and pollution). D. Identify that the lithosphere contains rocks and minerals and that minerals make up rocks. Describe how rocks and minerals are formed and/or classified. E. Describe the processes that contribute to the continuous changing of Earth's surface (e.g., earthquakes, volcanic eruptions, erosion, mountain building and lithospheric plate movements).	1. Describe how objects in the solar system are in regular and predictable motions that explain such phenomena as days, years, seasons, eclipses, tides and moon cycles. 2. Explain that gravitational force is the dominant force determining motions in the solar system and in particular keeps the planets in orbit around the sun. 3. Compare the orbits and composition of comets and asteroids with that of Earth. 4. Describe the effect that asteroids or meteoroids have when moving through space and sometimes entering planetary atmospheres (e.g., meteor-"shooting star" and meteorite). 5. Explain that the universe consists of billions of galaxies that are classified by shape. 6. Explain interstellar distances are measured in light years (e.g., the nearest star beyond the sun is 4.3 light years away). 7. Examine the life cycle of a star and predict the next likely stage of a star. 8. Name and describe tools used to study the universe (e.g., telescopes, probes, satellites and spacecraft).

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	By the end of the 6-8 program, students will…	9. Describe the interior structure of Earth and Earth's crust as divided into tectonic plates riding on top of the slow moving currents of magma in the mantle. 10. Explain that most major geological events (e.g., earthquakes, volcanic eruptions, hot spots and mountain building) result from plate motion. 11. Use models to analyze the size and shape of Earth, its surface and its interior (e.g., globes, topographic maps, satellite images). 12. Explain that some processes involved in the rock cycle are directly related to thermal energy and forces in the mantle that drive plate motions.13. Describe how landforms are created through a combination of destructive (e.g., weathering and erosion) and constructive processes (e.g., crustal deformation, volcanic eruptions and deposition of sediment). 14. Explain that folding, faulting and uplifting can rearrange the rock layers so the youngest is not always found on top. 15. Illustrate how the three primary types of plate boundaries (transform, divergent and convergent) cause different landforms (e.g., mountains, volcanoes and ocean trenches).

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Life Sciences Students demonstrate an understanding of how living systems function and how they interact with the physical environment. This includes an understanding of the cycling of matter and flow of energy in living systems. An understanding of the characteristics, structure and function of cells, organisms and living systems will be developed. Students will also develop a deeper understanding of the principles of heredity, biological evolution, and the diversity and interdependence of life. Students demonstrate an understanding of different historical perspectives, scientific approaches and emerging scientific issues associated with the life sciences.	A. Explain that the basic functions of organisms are carried out in cells and groups of specialized cells form tissues and organs; the combination of these cells make up multicellular organisms that have a variety of body plans and internal structure B. Describe the characteristics of an organism in terms of a combination of inherited traits and recognize reproduction as a characteristic of living organisms essential to the continuation of the species. C. Explain how energy entering the ecosystems as sunlight supports the life of organisms through photosynthesis and the transfer of energy through the interactions of organisms and the environment. D. Explain how extinction of a species occurs when the environment changes and its adaptive characteristics are insufficient to allow survival (as seen in evidence of the fossil record).	1. Describe that asexual reproduction limits the spread of detrimental characteristics through a species and allows for genetic continuity. 2. Recognize that in sexual reproduction new combinations of traits are produced which may increase or decrease an organism's chances for survival. 3. Explain how variations in structure, behavior or physiology allow some organisms to enhance their reproductive success and survival in a particular environment. 4. Explain that diversity of species is developed through gradual processes over many generations (e.g., fossil record). 5. Investigate how an organism adapted to a particular environment may become extinct if the environment, as shown by the fossil record, changes.

Standard	Benchmark	Indicators
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Physical Sciences Students demonstrate an understanding of the composition of physical systems and the concepts and principles that describe and predict physical interactions and events in the natural world. This includes demonstrating an understanding of the structure and properties of matter, the properties of materials and objects, chemical reactions and the conservation of matter. In addition, it includes understanding the nature, transfer and conservation of energy; motion and the forces affecting motion; and the nature of waves and interactions of matter and energy. Students demonstrate an understanding of the historical perspectives, scientific approaches and emerging scientific issues associated with the physical sciences.	A. Relate uses, properties and chemical processes to the behavior and/or arrangement of the small particles that compose matter. B. In simple cases, describe the motion of objects and conceptually describe the effects of forces on an object. C. Describe renewable and nonrenewable sources of energy (e.g., solar, wind, fossil fuels, biomass, hydroelectricity, geothermal and nuclear energy) and the management of these sources. D. Describe that energy takes many forms, some forms represent kinetic energy and some forms represent potential energy; and during energy transformations the total amount of energy remains constant.	1. Describe how the change in the position (motion) of an object is always judged and described in comparison to a reference point. 2. Explain that motion describes the change in the position of an object (characterized by a speed and direction) as time changes. 3. Explain that an unbalanced force acting on an object changes that object's speed and/or direction. 4. Demonstrate that waves transfer energy. 5. Demonstrate that vibrations in materials may produce waves that spread away from the source in all directions (e.g., earthquake waves and sound waves).

Standard	Benchmark	Indicators
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Science and Technology Students recognize that science and technology are interconnected and that using technology involves assessment of the benefits, risks and costs. Students should build scientific and technological knowledge, as well as the skill required to design and construct devices. In addition, they should develop the processes to solve problems and understand that problems may be solved in several ways.	A. Give examples of how technological advances, influenced by scientific knowledge, affect the quality of life. B. Design a solution or product taking into account needs and constraints (e.g., cost, time, trade-offs, properties of materials, safety and aesthetics).	1. Examine how science and technology have advanced through the contributions of many different people, cultures and times in history. 2. Examine how choices regarding the use of technology are influenced by constraints caused by various unavoidable factors (e.g., geographic location, limited resources, social, political and economic considerations). 3. Design and build a product or create a solution to a problem given more than two constraints (e.g., limits of cost and time for design and production, supply of materials and environmental effects). 4. Evaluate the overall effectiveness of a product design or solution.

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Scientific Inquiry Students develop scientific habits of mind as they use the processes of scientific inquiry to ask valid questions and to gather and analyze information. They understand how to develop hypotheses and make predictions. They are able to reflect on scientific practices as they develop plans of action to create and evaluate a variety of conclusions. Students are also able to demonstrate the ability to communicate their findings to others.	A. Explain that there are differing sets of procedures for guiding scientific investigations and procedures are determined by the nature of the investigation, safety considerations and appropriate tools. B. Analyze and interpret data from scientific investigations using appropriate mathematical skills in order to draw valid conclusions.	1. Choose the appropriate tools or instruments and use relevant safety procedures to complete scientific investigations. 2. Describe the concepts of sample size and control and explain how these affect scientific investigations. 3. Read, construct and interpret data in various forms produced by self and others in both written and oral form (e.g., tables, charts, maps, graphs, diagrams and symbols). 4. Apply appropriate math skills to interpret quantitative data (e.g., mean, median and mode).

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Scientific Ways of Knowing Students realize that the current body of scientific knowledge must be based on evidence, be predictive, logical, subject to modification and limited to the natural world. This includes demonstrating an understanding that scientific knowledge grows and advances as new evidence is discovered to support or modify existing theories, as well as to encourage the development of new theories. Students are able to reflect on ethical scientific practices and demonstrate an understanding of how the current body of scientific knowledge reflects the historical and cultural contributions of women and men who provide us with a more reliable and comprehensive understanding of the natural world.	A. Use skills of scientific inquiry processes (e.g., hypothesis, record keeping, description and explanation). B. Explain the importance of reproducibility and reduction of bias in scientific methods. C. Give examples of how thinking scientifically is helpful in daily life.	1. Identify the difference between description (e.g., observation and summary) and explanation (e.g., inference, prediction, significance and importance). 2. Explain why it is important to examine data objectively and not let bias affect observations.