

Explore the New York State Learning Standards for Science (based on the NGSS) by taking a deeper look at the Three-Dimensions (Scientific and Engineering Practices, Disciplinary Core Ideas, and Crosscutting Concepts) used to create the Performance Expectations. Use these Three-Dimensions to inform your teaching strategies when covering your science topics using the 5E Model.

Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts
<p><b>Developing and Using Models</b> Modeling in 6-8 builds on K-5 experiences and progresses to developing, using, and revising models to describe, test, and predict more abstract phenomena and design systems.</p> <ul style="list-style-type: none"> <li>Develop and use a model to describe phenomena. (MS-LS1-2)</li> </ul> <p><b>Planning and Carrying Out Investigations</b> Planning and carrying out investigations in 6-8 builds on K-5 experiences and progresses to include investigations that use <b>multiple variables</b> and provide evidence to support explanations or solutions.</p> <ul style="list-style-type: none"> <li>Conduct an investigation to produce data to serve as the basis for evidence that meet the goals of an investigation. (MS-LS1-1)</li> </ul> <p><b>Constructing Explanations and Designing Solutions</b> Constructing explanations and designing solutions in 6-8 builds on K-5 experiences and progresses to include constructing explanations and designing solutions supported by multiple sources of evidence consistent with scientific knowledge, principles, and theories.</p> <ul style="list-style-type: none"> <li>Construct a scientific explanation based on valid and reliable evidence obtained from sources (including the students' own experiments) and the assumption that theories and laws that describe the natural world operate today as they did in the past and will continue to do so in the future. (MS-LS1-3)</li> </ul> <p><b>Obtaining, Evaluating, and Communicating Information</b> Obtaining, evaluating, and communicating information in 6-8 builds on K-5 experiences and progresses to evaluating the merit and validity of ideas and methods.</p> <ul style="list-style-type: none"> <li> Gather, read, and synthesize information from multiple appropriate sources and assess the credibility, accuracy, and possible bias of each publication and methods used, and describe how they are supported or not supported by evidence. (MS-LS1-4)</li> </ul>	<p><b>LS1.A: Structure and Function</b></p> <ul style="list-style-type: none"> <li>All living things are made up of cells, which is the smallest unit that can be said to be alive. An organism may consist of one single cell (unicellular) or many different numbers and types of cells (multicellular). (MS-LS1-7)</li> <li>Within cells, special structures are responsible for particular functions, and the cell membrane forms the boundary that controls what enters and leaves the cell. (MS-LS1-2)</li> <li>In multicellular organisms, the body is a system of multiple interacting subsystems. These subsystems are groups of cells that work together to form tissues and organs that are specialized for particular body functions. (MS-LS1-2)</li> </ul> <p><b>LS1.D: Information Processing</b></p> <ul style="list-style-type: none"> <li>Each sense receptor responds to different inputs (electromagnetic, mechanical, chemical), transmitting them as signals that travel along nerve cells to the brain. (MS-LS1-6)</li> <li>(MS-LS1) Plants respond to stimuli such as gravity (gravitropism) and light (phototropism). (MS-LS1-8)</li> </ul>	<p><b>Cause and Effect</b></p> <ul style="list-style-type: none"> <li>Cause and effect relationships may be used to predict phenomena in natural systems. (MS-LS1-8)</li> </ul> <p><b>Scale, Proportion, and Quantity</b></p> <ul style="list-style-type: none"> <li>Phenomena that can be observed at one scale may not be observable at another scale. (MS-LS1-1)</li> </ul> <p><b>Systems and System Models</b></p> <ul style="list-style-type: none"> <li>Systems may interact with other systems; they may have sub-systems and be a part of larger complex systems. (MS-LS1-2)</li> </ul> <p><b>Structure and Function</b></p> <ul style="list-style-type: none"> <li>Compare and microscopic structures and systems can be visualized, modeled, and used to describe how their function depends on the relationships among its parts, therefore complex natural structures/systems can be analyzed to determine how they function. (MS-LS1-2)</li> </ul> <p><b>Connections to Engineering, Technology, and Applications of Science</b></p> <p><b>Interdependence of Science, Engineering, and Technology</b></p> <ul style="list-style-type: none"> <li>Engineering advances have led to important discoveries in virtually every field of science, and scientific discoveries have led to the development of entire industries and engineered systems. (MS-LS1-1)</li> </ul> <p><b>Connections to Nature of Science</b></p> <p><b>Science is a Human Endeavor</b></p> <ul style="list-style-type: none"> <li>Scientists and engineers are guided by habits of mind such as intellectual honesty, tolerance of ambiguity, skepticism, and openness to new ideas. (MS-LS1-2)</li> </ul>

# Three-Dimensional Teaching: Elementary School

## Learning Resources

182 E. Union Street  
Allegany, NY 14706

October 7, 2016  
8:30-2:30

## Registration

Please have your contact person or curriculum coordinator notify Laurie Sledge at **716.376.8357** or [laurie\\_sledge@caboces.org](mailto:laurie_sledge@caboces.org)

## 5E Model

Engage

Explore

Explain

Elaborate

Evaluate

CoSer 521  
Learning Opportunity

NYS Teaching Standards:

II, III, VII



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