



**Lab-Aids Correlations for the
Science Georgia Standards of Excellence
Middle School Science**

*Din Seaver, Curriculum Development and Product Manager, Lab-Aids
Lisa Kelp, Vice President, Lab-Aids Institute*

This document is intended to show how the *Issues and Science, 3rd Edition* program materials align with the [Georgia Science Standards for Excellence – 2016](#).

ABOUT OUR PROGRAMS

Lab-Aids has based its home offices and operations in Ronkonkoma, NY, since 1963. We publish over 200 kits and core curriculum programs to support science teaching and learning, for grades 6-12. All core curricula support a direct-experience pedagogy, with support for literacy skill development and feature assessment approaches and strategies that clearly show what students know and are able to do as a result of program use. All programs have extensive support for technology and feature comprehensive teacher support. For more information, please visit <https://www.lab-aids.com/indiana> and navigate to the program of interest.

ABOUT OUR MIDDLE SCHOOL CURRICULA -- DEVELOPED BY SEPUP

Instructional materials from the Science Education for Public Understanding Program (SEPUP) are developed at the Lawrence Hall of Science, at the University of California, Berkeley, and distributed nationally by Lab-Aids, Inc. Since 1987, development of SEPUP materials has been supported by grants from the National Science Foundation and other public and private sources. SEPUP programs include student books, equipment kits, teacher materials, and online digital content, and are available as units, each taking 3-8 weeks to complete. A suggested unit sequence for Indiana is shown below.

Grade 6	Grade 7	Grade 8
Land, Water, and Human Interactions	Ecology	Energy
Geological Processes	Body Systems	Chemistry of Materials
Earth's Resources	From Cells to Organisms	Chemical Reactions
Weather and Climate	Reproduction	Force and Motion
Solar System and Beyond	Evolution	Waves
		Fields and Interactions

Grade 6

Earth Science Standard	Where standard is addressed in <i>Issues and Science</i> Unit Name: Activity #
S6E1. Obtain, evaluate and communicate information about current scientific views of the universe and how those views evolved.	
a. Ask questions to determine changes in models of Earth’s position in the solar system, and origins of the universe as evidence that scientific theories change with the addition of new information. <i>(Clarification statement: Students should consider Earth’s position in geocentric and heliocentric models and the Big Bang as it describes the formation of the universe.)</i>	<i>Not addressed in this edition.</i>
b. Develop a model to represent the position of the solar system in the Milky Way galaxy and in the known universe.	<i>Solar System and Beyond: 15, 16</i>
c. Analyze and interpret data to compare and contrast the planets in our solar system in terms of: <ul style="list-style-type: none"> • size relative to Earth, • surface and atmospheric features, • relative distance from the sun, and • ability to support life. 	<i>Solar System and Beyond: 1, 10, 11, 12, 13*</i>
d. Develop and use a model to explain the interaction of gravity and inertia that governs the motion of objects in the solar system.	<i>Solar System and Beyond: 10, 11, 12, 14, 15, 16*</i>
e. Ask questions to compare and contrast the characteristics, composition, and location of comets, asteroids, and meteoroids.	<i>Solar System and Beyond: 10</i>
S6E2. Obtain, evaluate, and communicate information about the effects of the relative positions of the sun, Earth, and moon.	
a. Develop and use a model to demonstrate the phases of the moon by showing the relative positions of the sun, Earth, and moon	<i>Solar System and Beyond: 2, 3, 4, 5*</i>
b. Construct an explanation of the cause of solar and lunar eclipses.	<i>Solar System and Beyond: 5</i>
c. Analyze and interpret data to relate the tilt of the Earth to the distribution of sunlight throughout the year and its effect on seasons.	<i>Solar System and Beyond: 6, 7, 8, 9*</i>

Earth Science Standard	Where standard is addressed in <i>Issues and Science</i> Unit Name: Activity #
S6E3. Obtain, evaluate, and communicate information to recognize the significant role of water in Earth processes.	
<p>a. Ask questions to determine where water is located on Earth’s surface (oceans, rivers, lakes, swamps, groundwater, aquifers, and ice) and communicate the relative proportion of water at each location.</p>	<p><i>Land, Water, and Human Interactions: 8, 9*</i></p> <p><i>Weather and Climate: 5</i></p> <p><i>Earth’s Resources: 2</i></p> <p><i>Note: Students examine and ask questions about different locations where water is located on Earth’s surface, but they do not look at the proportion of water at each, except oceans.</i></p>
<p>b. Plan and carry out an investigation to illustrate the role of the sun’s energy in atmospheric conditions that lead to the cycling of water. <i>(Clarification statement: The water cycle should include evaporation, condensation, precipitation, transpiration, infiltration, groundwater, and runoff.)</i></p>	<p><i>Land, Water, and Human Interactions: 8, 9*</i></p>
<p>c. Ask questions to identify and communicate, using graphs and maps, the composition, location, and subsurface topography of the world’s oceans.</p>	<p><i>Not addressed in this edition.</i></p>
<p>d. Analyze and interpret data to create graphic representations of the causes and effects of waves, currents, and tides in Earth’s systems.</p>	<p><i>Weather and Climate: 9, 10, 14</i></p> <p><i>Land, Water, and Human Interactions: 12</i></p>
S6E4. Obtain, evaluate, and communicate information about how the sun, land, and water affect climate and weather.	
<p>a. Analyze and interpret data to compare and contrast the composition of Earth’s atmospheric layers (including the ozone layer) and greenhouse gases. <i>(Clarification statement: Earth’s atmospheric layers include the troposphere, stratosphere, mesosphere, and thermosphere.)</i></p>	<p><i>Weather and Climate: 14</i></p>
<p>b. Plan and carry out an investigation to demonstrate</p>	<p><i>Weather and Climate: 6</i></p>

Earth Science Standard	Where standard is addressed in <i>Issues and Science</i> Unit Name: Activity #
<p>how energy from the sun transfers heat to air, land and water at different rates. <i>(Clarification statement:</i> Heat transfer should include the processes of conduction, convection, and radiation.)</p>	
<p>c. Develop a model demonstrating the interaction between unequal heating and the rotation of the Earth that causes local and global wind systems.</p>	<i>Weather and Climate: 6, 10, 11, 14</i>
<p>d. Construct an explanation of the relationship between air pressure, weather fronts, and air masses and meteorological events such as tornados and thunderstorms.</p>	<i>Weather and Climate: 13</i>
<p>e. Analyze and interpret weather data to explain the effects of moisture evaporating from the ocean on weather patterns and weather events such as hurricanes.</p>	<i>Not addressed in this edition.</i>
<p>S6E5. Obtain, evaluate, and communicate information to show how Earth’s surface is formed.</p>	
<p>a. Ask questions to compare and contrast the Earth’s crust, mantle, inner and outer core, including temperature, density, thickness, and composition.</p>	<i>Geological Processes: 8</i>
<p>b. Plan and carry out an investigation of the characteristics of minerals and how minerals contribute to rock composition.</p>	<i>Earth’s Resources: 3</i>
<p>c. Construct an explanation of how to classify rocks by their formation and how rocks change through geologic processes in the rock cycle.</p>	<i>Geological Processes: 15</i>
<p>d. Ask questions to identify types of weathering, agents of erosion and transportation, and environments of deposition. <i>(Clarification statement:</i> Environments of deposition include deltas, barrier islands, beaches, marshes, and rivers.)</p>	<i>Land, Water, and Human Interactions: 7, 12, 13</i>
<p>e. Develop a model to demonstrate how natural processes (weathering, erosion, and deposition) and human activity change rocks and the surface of the Earth.</p>	<i>Land, Water, and Human Interactions: 7, 12, 13, 14, 15</i>
<p>f. Construct an explanation of how the movement of lithospheric plates, called plate tectonics, can cause</p>	<i>Geological Processes: 6, 7, 8, 10, 11, 12, 13, 14</i>

Earth Science Standard	Where standard is addressed in <i>Issues and Science</i> Unit Name: Activity #
major geologic events such as earthquakes and volcanic eruptions. <i>(Clarification statement: Include convergent, divergent, and transform boundaries.)</i>	
g. Construct an argument using maps and data collected to support a claim of how fossils show evidence of the changing surface and climate of the Earth.	<i>Earth's Resources: 10, 11, 12</i>
h. Plan and carry out an investigation to provide evidence that soil is composed of layers of weathered rocks and decomposed organic material.	<i>Not addressed in this edition.</i>
S6E6. Obtain, evaluate, and communicate information about the uses and conservation of various natural resources and how they impact the Earth.	
a. Ask questions to determine the differences between renewable/sustainable energy resources (examples: hydro, solar, wind, geothermal, tidal, biomass) and nonrenewable energy resources (examples: nuclear: uranium, fossil fuels: oil, coal, and natural gas), and how they are used in our everyday lives.	<i>Earth's Resources: 2</i>
b. Design and evaluate solutions for sustaining the quality and supply of natural resources such as water, soil, and air.	<i>Earth's Resources: 2, 4, 6, 13, 14</i>
c. Construct an argument evaluating contributions to the rise in global temperatures over the past century. <i>(Clarification statement: Tables, graphs, and maps of global and regional temperatures, and atmospheric levels of greenhouse gases such as carbon dioxide and methane, should be used as sources of evidence.)</i>	<i>Weather and Climate: 15, 16, 17</i>

Grade 7

Life Science Standard	Where standard is addressed in <i>Issues and Science</i> Unit and Activity #
S7L1. Obtain, evaluate, and communicate information to investigate the diversity of living organisms and how they can be compared scientifically.	
a. Develop and defend a model that categorizes organisms based on common characteristics.	<i>Evolution: 7, 8, 9, 10 11, 12, 13</i>
b. Evaluate historical models of how organisms were classified based on physical characteristics and how that led to the six kingdom system (currently archaea, bacteria, protists, fungi, plants, and animals). <i>(Clarification statement: This includes common examples and characteristics such as, but not limited to, prokaryotic, eukaryotic, unicellular, multicellular, asexual reproduction, sexual reproduction, autotroph, heterotroph, and unique cell structures. Modern classification will be addressed in high school.)</i>	<i>Not addressed in this edition.</i>
S7L2. Obtain, evaluate, and communicate information to describe how cell structures, cells, tissues, organs, and organ systems interact to maintain the basic needs of organisms.	
a. Develop a model and construct an explanation of how cell structures (specifically the nucleus, cytoplasm, cell membrane, cell wall, chloroplasts, lysosome, and mitochondria) contribute to the function of the cell as a system in obtaining nutrients in order to grow, reproduce, make needed materials, and process waste. <i>(Clarification statement: The intent is for students to demonstrate how the component structures of the cell interact and work together to allow the cell as a whole to carry out various processes. Additional structures, beyond those listed, will be addressed in high school Biology.)</i>	<i>From Cells to Organisms: 6, 7, 8, 11</i>
b. Develop and use a conceptual model of how cells are organized into tissues, tissues into organs, organs into systems, and systems into organisms.	<i>From Cells to Organisms: 10, 14, 15</i>
c. Construct an argument that systems of the body (Cardiovascular, Excretory, Digestive, Respiratory, Muscular, Nervous, and Immune) interact with one another to carry out life processes. <i>(Clarification statement: The emphasis is not on learning individual structures and functions</i>	<i>Body Systems: 1, 2, 3, 4, 9, 10, 11, 12</i>

Life Science Standard	Where standard is addressed in <i>Issues and Science</i> Unit and Activity #
associated with each system, but on how systems interact to support life processes.)	
S7L3. Obtain, evaluate, and communicate information to explain how organisms reproduce either sexually or asexually and transfer genetic information to determine the traits of their offspring.	
a. Construct an explanation supported with scientific evidence of the role of genes and chromosomes in the process of inheriting a specific trait.	<i>Reproduction: 2, 3, 4, 5, 6, 8, 9</i>
b. Develop and use a model to describe how asexual reproduction can result in offspring with identical genetic information while sexual reproduction results in genetic variation. <i>(Clarification statement: Models could include, but are not limited to, the use of monohybrid Punnett squares to demonstrate the heritability of genes and the resulting genetic variation, identification of heterozygous and homozygous, and comparison of genotype vs. phenotype.)</i>	<i>Reproduction: 1, 2, 3, 4, 5, 6, 8, 9</i>
c. Ask questions to gather and synthesize information about the ways humans influence the inheritance of desired traits in organisms through selective breeding. <i>(Clarification statement: The element specifically addresses artificial selection and the ways in which it is fundamentally different from natural selection.)</i>	<i>Evolution: 16</i> <i>Reproduction: 6</i>
S7L4. Obtain, evaluate, and communicate information to examine the interdependence of organisms with one another and their environments.	
a. Construct an explanation for the patterns of interactions observed in different ecosystems in terms of the relationships among and between organisms and abiotic components of the ecosystem. <i>(Clarification statement: The interactions include, but are not limited to, predator-prey relationships, competition, mutualism, parasitism, and commensalism.)</i>	<i>Ecology: 10, 11, 12, 13, 14, 15</i>
b. Develop a model to describe the cycling of matter and the flow of energy among biotic and abiotic components of an ecosystem. <i>(Clarification statement: Emphasis is on tracing movement of matter and flow of energy, not the biochemical mechanisms of photosynthesis and cellular respiration.)</i>	<i>Ecology: 7, 8, 10, 11, 13</i>

Life Science Standard	Where standard is addressed in <i>Issues and Science</i> Unit and Activity #
c. Analyze and interpret data to provide evidence for how resource availability, disease, climate, and human activity affect individual organisms, populations, communities, and ecosystems.	<i>Ecology: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16</i>
d. Ask questions to gather and synthesize information from multiple sources to differentiate between Earth's major terrestrial biomes (i.e., tropical rain forest, savanna, temperate forest, desert, grassland, taiga, and tundra) and aquatic ecosystems (i.e., freshwater, estuaries, and marine). (<i>Clarification statement:</i> Emphasis is on the factors that influence patterns across biomes such as the climate, availability of food and water, and location.)	<i>Not addressed in this edition.</i>
S7L5. Obtain, evaluate, and communicate information from multiple sources to explain the theory of evolution of living organisms through inherited characteristics.	
a. Use mathematical representations to evaluate explanations of how natural selection leads to changes in specific traits of populations over successive generations. (<i>Clarification statement:</i> Referencing data should be obtained from multiple sources including, but not limited to, existing research and simulations. Students should be able to calculate means, represent this data in a table or graph, and reference it when explaining the principles of natural selection.)	<i>Evolution: 1, 2, 3, 4, 5, 6</i>
b. Construct an explanation based on evidence that describes how genetic variation and environmental factors influence the probability of survival and reproduction of a species.	<i>Evolution: 1, 2, 3, 4</i>
c. Analyze and interpret data for patterns in the fossil record that document the existence, diversity, and extinction of organisms and their relationships to modern organisms. (<i>Clarification statement:</i> Evidence of evolution found in comparisons of current/modern organisms such as homologous structures, DNA, and fetal development will be addressed in high school.)	<i>Evolution: 7, 8, 9, 10, 11, 12</i>

Grade 8

Physical Science Standard	Where standard is addressed in <i>Issues and Science</i> Unit and Activity #
S8P1. Obtain, evaluate, and communicate information about the structure and properties of matter.	
a. Develop and use a model to compare and contrast pure substances (elements and compounds) and mixtures.	<i>Chemistry of Materials: 2, 3</i>
b. Develop and use models to describe the movement of particles in solids, liquids, gases, and plasma states when thermal energy is added or removed.	<i>Chemistry of Materials: 8, 9, 10</i> <i>Note: This standard is covered except for plasma states.</i>
c. Plan and carry out investigations to compare and contrast chemical (i.e., reactivity, combustibility) and physical (i.e., density, melting point, boiling point) properties of matter.	<i>Chemical Reactions: 2, 3, 5</i> <i>Chemistry of Materials: 1, 2, 3, 4, 5</i>
d. Construct an argument based on observational evidence to support the claim that when a change in a substance occurs, it can be classified as either chemical or physical. <i>(Clarification statement: Evidence could include ability to separate mixtures, development of a gas, formation of a precipitate, change in energy, color, and/or form.)</i>	<i>Chemical Reactions: 2, 3, 5</i>
e. Develop models (e.g., atomic-level models, including drawings, and computer representations) by analyzing patterns within the periodic table that illustrate the structure, composition, and characteristics of atoms (protons, neutrons, and electrons) and simple molecules.	<i>Chemistry of Materials: 6, 7</i> <i>Note: This is covered for simple molecules only.</i>
f. Construct an explanation based on evidence to describe conservation of matter in a chemical reaction including the resulting differences between products and reactants. <i>(Clarification statement: Evidence could include models such as balanced chemical equations.)</i>	<i>Chemical Reactions: 6, 7</i>
S8P2. Obtain, evaluate, and communicate information about the law of conservation of energy to develop arguments that energy can transform from one form to another within a system.	
a. Analyze and interpret data to create graphical displays that illustrate the relationships of kinetic energy to mass and speed, and potential energy to mass and height of an object.	<i>Force and Motion: 1, 2, 3, 4, 5</i>

Physical Science Standard	Where standard is addressed in <i>Issues and Science</i> Unit and Activity #
b. Plan and carry out an investigation to explain the transformation between kinetic and potential energy within a system (e.g., roller coasters, pendulums, rubber bands, etc.).	<i>Energy: 2, 3</i> <i>Force and Motion: 1, 2, 3, 4, 5</i>
c. Construct an argument to support a claim about the type of energy transformations within a system [e.g., lighting a match (light to heat), turning on a light (electrical to light)].	<i>Energy: 2, 3, 4, 5, 6, 10, 11, 14, 15</i>
d. Plan and carry out investigations on the effects of heat transfer on molecular motion as it relates to the collision of atoms (conduction), through space (radiation), or in currents in a liquid or a gas (convection).	<i>Energy: 7, 12</i>
S8P3. Obtain, evaluate, and communicate information about cause and effect relationships between force, mass, and the motion of objects.	
a. Analyze and interpret data to identify patterns in the relationships between speed and distance, and velocity and acceleration. <i>(Clarification statement: Students should be able to analyze motion graphs, but students should not be expected to calculate velocity or acceleration.)</i>	<i>Force and Motion: 2, 8</i>
b. Construct an explanation using Newton’s Laws of Motion to describe the effects of balanced and unbalanced forces on the motion of an object.	<i>Force and Motion: 7, 8, 9, 10, 11</i>
c. Construct an argument from evidence to support the claim that the amount of force needed to accelerate an object is proportional to its mass (inertia).	<i>Force and Motion: 7, 8, 9</i>
S8P4. Obtain, evaluate, and communicate information to support the claim that electromagnetic (light) waves behave differently than mechanical (sound) waves.	
a. Ask questions to develop explanations about the similarities and differences between electromagnetic and mechanical waves. <i>(Clarification statement: Include transverse and longitudinal waves and wave parts such as crest, trough, compressions, and rarefactions.)</i>	<i>Waves: 2, 3, 7, 12</i>
b. Construct an explanation using data to illustrate the relationship between the electromagnetic spectrum and energy.	<i>Waves: 10, 11, 12</i>

Physical Science Standard	Where standard is addressed in <i>Issues and Science</i> Unit and Activity #
c. Design a device to illustrate practical applications of the electromagnetic spectrum (e.g., communication, medical, military).	<i>Waves: 12</i> <i>Note: Practical applications are discussed and analyzed, but a single device is not designed by the students.</i>
d. Develop and use a model to compare and contrast how light and sound waves are reflected, refracted, absorbed, diffracted or transmitted through various materials. (<i>Clarification statement: Include echo and how color is seen but do not cover interference and scattering.</i>)	<i>Waves: 8, 9, 10, 11, 12</i>
e. Analyze and interpret data to predict patterns in the relationship between density of media and wave behavior (i.e., speed).	<i>Waves: 3, 12</i>
f. Develop and use a model (e.g., simulations, graphs, illustrations) to predict and describe the relationships between wave properties (e.g., frequency, amplitude, and wavelength) and energy.	<i>Waves: 2, 3, 7, 10, 11, 12</i>
g. Develop and use models to demonstrate the effects that lenses have on light (i.e., formation an image) and their possible technological applications.	<i>Waves: 9</i>
S8P5. Obtain, evaluate, and communicate information about gravity, electricity, and magnetism as major forces acting in nature.	
a. Construct an argument using evidence to support the claim that fields (i.e., magnetic fields, gravitational fields, and electric fields) exist between objects exerting forces on each other even when the objects are not in contact.	<i>Fields and Interactions: 5, 7, 9, 10, 12</i>
b. Plan and carry out investigations to demonstrate the distribution of charge in conductors and insulators. (<i>Clarification statement: Include conduction, induction, and friction.</i>)	<i>Fields and Interactions: 8, 9</i>
c. Plan and carry out investigations to identify the factors (e.g., distance between objects, magnetic force produced by an electromagnet with varying number of wire turns, varying number or size of dry cells, and varying size of iron core) that affect the strength of electric and magnetic forces. (<i>Clarification statement: Including, but not limited to, generators or motors.</i>)	<i>Fields and Interactions: 9, 10, 11, 12</i>