Lab-Aids Correlations for

2023 PENNSYLVANIA
SCIENCE, TECHNOLOGY & ENGINEERING, ENVIRONMENTAL LITERACY AND SUSTAINABILITY (STEELS) STANDARDS
PHYSICAL SCIENCE – GRADES 6-8

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This document is intended to show how the SEPUP *Issues and Science 3rd edition* materials align with the 2023 STEELS Standards.

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, grades 6-12. All core curricula support an inquiry-driven pedagogy, with support for literacy skill development and with assessment programs 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 www.lab-aids.com and navigate to the program of interest.

SEPUP

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 full year courses, or separately, as units, each taking 3-8 weeks to complete, as listed below.

SUGGESTED SCOPE AND SEQUENCE

***Issues and Science, 3rd edition:* Physical Science units**
Energy
Chemistry of Materials
Chemical Reactions
Force and Motion
Fields and Interactions
Waves

ABOUT THE LAB-AIDS CITATIONS

Citations included in the correlation document are as follows:

Unit title:	*Energy*:
Activity Number	2, 12* * indicates where standard is assessed

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Physical Science Standards Correlation

STEELS 3.2 Physical Science: Grades 6-8		
Strand	**Standard**	***Issues and Science*** **Unit: Activity(ies)**
Structure and Properties of Matter	**3.2.6-8.A** Develop models to describe the atomic composition of simple molecules and extended structures.	*Chemistry of Materials:* 2, 6, 7, 12*
	3.2.6-8.B Develop a model that predicts and describes changes in the particle motion, temperature, and state of a pure substance when thermal energy is added or removed.	*Chemistry of Materials:* 8, 9, 10*
Chemical Reactions	**3.2.6-8.C** Gather and make sense of information to describe how synthetic materials come from natural resources and impact society.	*Chemistry of Materials:* 1, 2, 3, 4, 5, 11, 12, 13*
	3.2.6-8.D Analyze and interpret data on the properties of substances before and after the substances interact to determine if a chemical reaction has occurred.	*Chemical Reactions:* 1, 2, 3, 4, 5* *Chemistry of Materials:* 4
	3.2.6-8.E Develop and use a model to describe how the total number of atoms does not change in a chemical reaction and thus mass is conserved.	*Chemical Reactions:* 1, 2, 3, 4, 5, 6, 7*
	3.2.6-8.F Undertake a design project to construct, test, and modify a device that either releases or absorbs thermal energy by chemical processes.	*Chemical Reactions:* 2, 3, 5, 8, 9, 10, 11*
Forces and Motion	**3.2.6-8.G** Apply Newton's Third Law to design a solution to a problem involving the motion of two colliding objects.	*Force and Motion:* 1, 10, 11, 12*
	3.2.6-8.H Plan an investigation to provide evidence that the change in an object's motion depends on the sum of the forces on the object and the mass of the object.	*Force and Motion:* 1, 6, 7, 8, 9, 13*
Types of Interactions	**3.2.6-8.I** Ask questions about data to determine the factors that affect the strength of electric and magnetic forces.	*Fields and Interactions:* 7, 8, 9, 12, 13*, 14
	3.2.6-8.J Construct and present arguments using evidence to support the claim that gravitational interactions are attractive and depend on the masses of interacting objects.	*Fields and Interactions:* 3, 4, 7*
	3.2.6-8.K Conduct an investigation and evaluate the experimental design to provide evidence that fields exist between objects exerting forces on each other even though the objects are not in contact.	*Fields and Interactions:* 5, 7, 9, 10, 12*

Definitions of Energy	**3.2.6-8.L** Construct and interpret graphical displays of data to describe the relationships of kinetic energy to the mass and speed of an object.	*Force and Motion:* *1, 2, 3, 4, 5**
Conservation of Energy and Energy Transfer	**3.2.6-8.M** Apply scientific principles to design, construct, and test a device that either minimizes or maximizes thermal energy transfer.	*Energy:* 1, 7, 8, 10, 11, 12, 13*
	3.2.6-8.N Plan an investigation to determine the relationships among the energy transferred, the type of matter, the mass, and the change in the average kinetic energy of the particles as measured by the temperature of the sample.	*Energy:* 1, 4, 6, 7, 8*
	3.2.6-8.O Construct, use, and present arguments to support the claim that when the kinetic energy of an object changes, energy is transferred to or from the object.	*Energy:* 2, 3, 4, 5, 6*
Relationship Between Energy and Forces	**3.2.6-8.P** Develop a model to describe that when the arrangement of objects interacting at a distance changes, different amounts of potential energy are stored in the system.	*Fields and Interactions:* 3, 4, 6, 7, 10, 11* *Force and Motion:* 1, 3, 4, 5, 10, 14
Wave Properties	**3.2.6-8.Q** Use mathematical representations to describe a simple model for waves that includes how the amplitude of a wave is related to the energy in a wave.	*Waves:* 1, 2, 3, 7*
Electromagnetic Radiation	**3.2.6-8.R** Develop and use a model to describe how waves are reflected, absorbed, or transmitted through various materials.	*Waves:* 3, 4, 8, 9, 10, 11, 12, 13*
Information Technologies and Instrumentation	**3.2.6-8.S** Integrate qualitative scientific and technical information to support the claim that digitized signals are a more reliable way to encode and transmit information than analog signals.	*Waves:* 5, 6
Engineering, Technology, and Applications of Science (ETS)	**3.5.6-8.M (ETS)** Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.	*Chemical Reactions:* 8, 9, 10, 11 *Fields and Interactions:* 1, 2, 3, 6, 11, 13*
	3.5.6-8.N (ETS) Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success.	*Chemical Reactions:* 8, 9, 10, 11 *Fields and Interactions:* 6, 11, 13, 15*

	3.5.6-8.P (ETS) Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.	*Fields and Interactions:* 6, 13, 15
	3.5.6-8.W (ETS) Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.	*Force and Motion:* 1, 10, 11, 13, 14, 15* *Fields and Interactions:* 2, 3, 6*